Chemical Week

January 5, 1952

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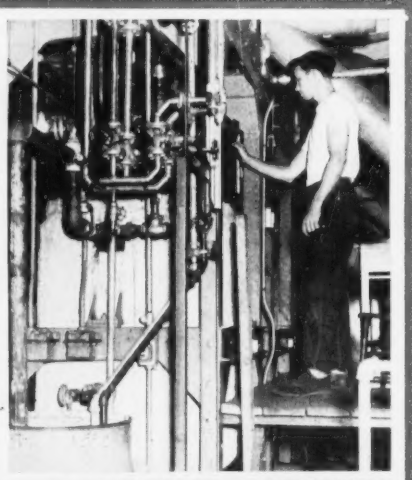

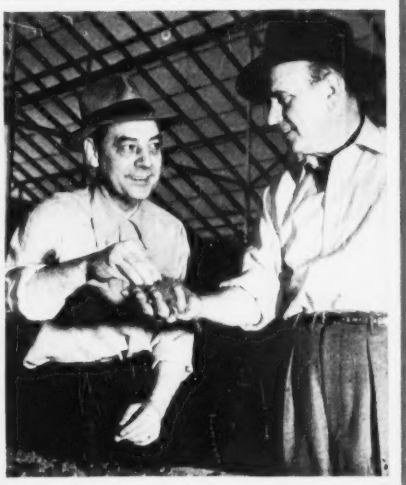

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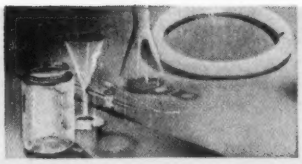

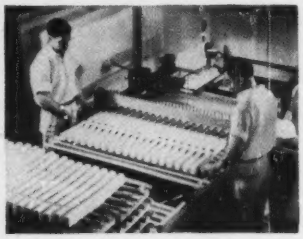

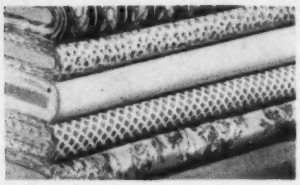

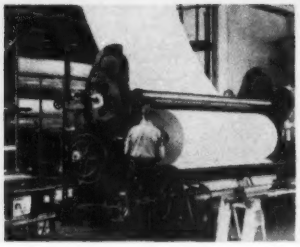

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Chemical Week

Volume 70 Number 1

January 5, 1952

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OPINION . . . . . .

Lore of the East

To THE EDITOR: That was an interesting report on the N. Y. Chem Show you published under the fetching title "Pulchritude and Pumps" (Dec. 8.) . . . but I'll bet you a bottle of Tintair that your prose ran away with you . . . out-distanced the facts.

You said, in reporting the attendance of a large proportion of foreign chemical men: "No fezzed, *red-bearded* Mohammedans made the Exposition their second Mecca, but it was hardly unusual to hear a group of visitors conversing in French or German . . ."

The words sound fine, but since Mohammedans are primarily dark-skinned, black-haired people . . . who would expect to see them with *red* beards . . .?

N. R. CRANSTON,
Buffalo, N. Y.

Mail us that bottle of henna, Reader Cranston. A CW editor, steeped in the lore of the East (and who admits to a minor flush of fancy prose) defends himself thus: (1) Mohammedans normally have black beards. (2) Once they have made a pilgrimage to Mecca they dye their beards red. (3) If the Chem Show were their second Mecca they would be flaunting red whiskers. —ED.

Slap on the Wrist

To THE EDITOR: I protest! Even though CHEMICAL WEEK flatters me by showing me (Dec. 22) as a much younger and better looking man than I am, I still protest. Furthermore, you put me in the embarrassing position of having to write a letter of apology to Al Loeffler who will probably sue you for libel for tagging his face with my name.

In our business, mislabelling is a serious offense. Its effects in your business are hardly likely to be disastrous but I am sure that this gross mistake calls for a slap on the wrist for your Chief Control Chemist!

HENRY W. JOHNSTONE
Senior Vice President
Merck & Co., Inc.
Rahway, New Jersey

For correct caption-cuts see below—ED.

Fluctuation Damper

To THE EDITOR: Your article on salt cake ("Plus for Salt Cake", Oct. 27) gave an excellent picture of this chemical and its fluctuations.

We think it is newsworthy to add that American Potash, whose output, as you noted, accounts for better than 60 percent of the total production of natural cake, has done something about these fluctuations.

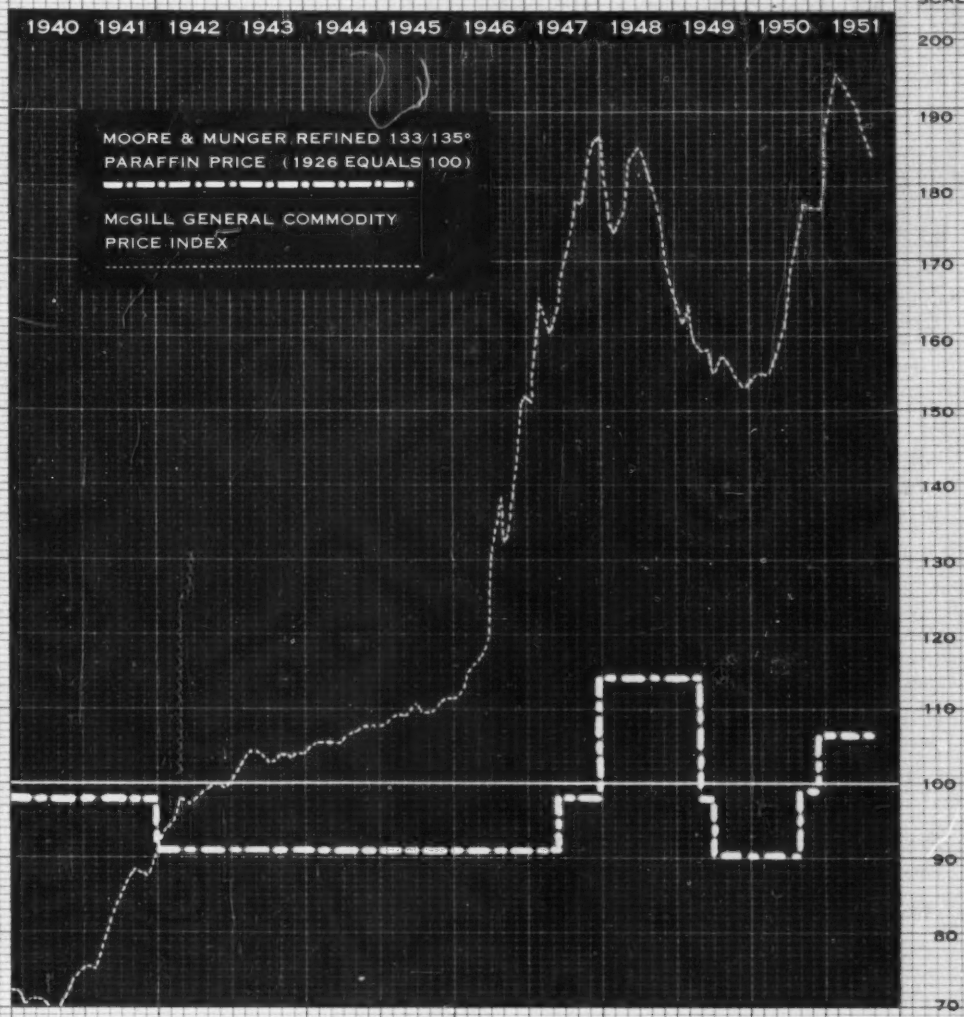
During the winter months, American Potash sprays high-sulfate brines into the atmosphere and thus accumulates a crop of crude Glauber's salt. Crystallization depends on direct cooling, plus the considerable effect of evaporation in the dry desert air. A low temperature is necessary because the transition point between Glauber's salt and anhydrous sulfate is substantially lowered by the high concentration of chloride in the brine.

By this means a stockpile of crude sulfate is created which is entirely independent of the salt cake produced as a co-product in the main cyclic process. When demand is high additional crude can be drawn from this stockpile . . .

H. W. Johnstone

A. T. Loeffler

A FACT WORTH NOTING



SINCE 1940 GENERAL COMMODITY PRICES HAVE RISEN 156%. MOORE & MUNGER'S REFINED PARAFFIN ONLY 9%. THE RELATIVE COST OF PARAFFIN IN WAXED PAPER HAS ACTUALLY DECLINED WHILE, AT THE SAME TIME, QUALITY HAS IMPROVED.

IT'S WORTH NOTING THAT IN WAX YOU'RE STILL GETTING VERY CLOSE TO YOUR 1940 DOLLAR'S WORTH, TODAY.

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OPINION . . . . . .

In this predominantly by-product industry, this stand-by capacity, though less than 5 per cent of the total U. S. consumption, should be of considerable assistance.

D. S. DINSMOOR
Vice President in Charge of Research and Development
American Potash & Chemical Corp.
Los Angeles, Cal.

Newsworthy it is, Reader Dinsmoor, and an appreciated extension to our article.—ED.

Black Problem

TO THE EDITOR: In your Nov. 24th issue you ran an article ("Black Problem") based on an interview with Mr. C. A. Stokes [who outlined that the provision of adequate liquid raw material supplies at a low price is one of the most pressing problems facing the carbon black industry].

This is certainly an article which is . . . enlightening—one that the layman can understand—one to which others may . . . add in coming up with some of the answers to this problem.

I hope that you will be able to get Mr. Stoke's views in more articles as his interests . . . are quite diversified.

D. S. CUSHMAN
Vice President—General Manager
Innis, Speiden & Co., Inc.
New York, N. Y.

Encourage Youth

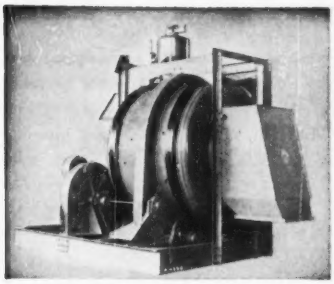
TO THE EDITOR: . . . The picture of the technical and scientific manpower shortage presented in Chemical Week ("Manpower: Shorter Still," Nov. 24) accurately summarizes the current critical situation.

The demand in industry for chemists and chemical engineers should continue to far outstrip the supply for several years to come.

In my opinion industry should utilize as effectively as possible the services of its technical employees . . . should encourage larger numbers of high school students to enter the scientific and engineering fields at the collegiate level.

G. P. WHITCOMB
Asst. Personnel Director
American Cyanamid Co.
New York, N. Y.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.
Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



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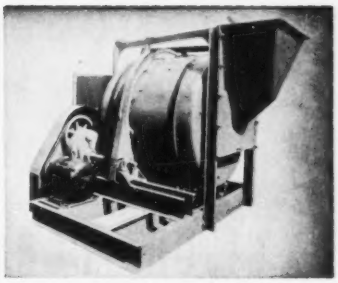
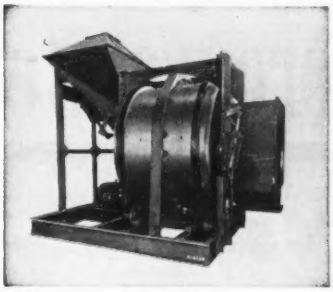
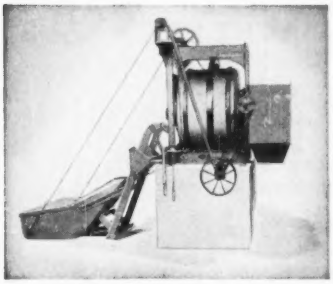


COMPOSITION MATERIALS • INSULATING AND REFRACTORY CHEMICALS • CLAY • GLASS BATCHES • FOUNDRY CORE SAND—13 cu ft dry mixer on skids.



ENAMEL FRITS • GLASS—50 cu ft dustproof mixer. Fully-automatic, electrically controlled charging and discharging.



FURNACE CHARGES • GLASS BATCHES—28 cu ft mixer with elevating power loader.

How To Straighten Out Your Mixer Problems

What do you mix? Here's a partial line-up of industrial mixers bearing the famous Worthington-Ransome trademark—which means the right design for every type of mix.

And you'll find in every mixer the following Worthington-Ransome features: *thorough* mixing (or blending) of even the finest dry materials or colors in any proportion . . . *clean* discharge . . . *dustproof* design (where required) . . . *heavy-duty* construction.

For solution of your particular mixing problem or for free bulletins, write: Worthington Pump and Machinery Corporation, Ransome Industrial Mixer Division, Dunellen, New Jersey.

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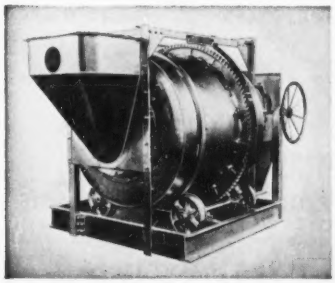
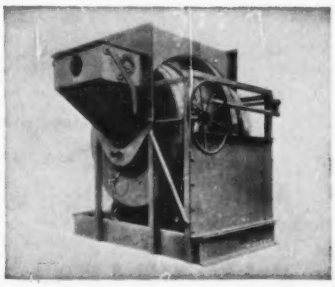


SOAP POWDER • PIPE TOBACCO • SNUFF—Dustproof mixer for blending and mixing.



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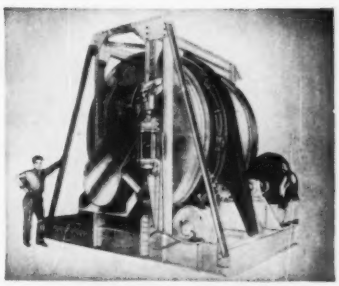

FURNACE CHARGES—One of the largest industrial mixers—batch capacity of 250 cu ft.

METHYL DICHLOROACETATE has now a limited use as an organic intermediate. The reactions listed below or merely its formula may suggest new possibilities to the inquiring mind. The two chlorine atoms are easily replaced by a variety of organic groups, thus indicating a large number of possible derivatives. This ester has already been suggested specifically in several organic and pharmaceutical syntheses.

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• Typical reactions of METHYL DICHLOROACETATE •

$Cl_2CHCOOCH_3 + 2NaOC_2H_5 \longrightarrow (C_2H_5O)_2CHCOOCH_3 + 2NaCl$
sodium ethylate — methyl diethoxyacetate

$2Cl_2CHCOOCH_3 \xrightarrow{\text{catalyst}} Cl_2C(CCl_2COOCH_3)COOCH_3 + H_2$
methyl tetrachlorsuccinate

$Cl_2CHCOOCH_3 + C_6H_5CHO \xrightarrow{\text{Mg amalgam}} C_6H_5CH_2COCOOCH_3 + Cl_2$
benzaldehyde — methyl phenylpyruvate

$Cl_2CHCOOCH_3 + RCH = CH_2 \xrightarrow{\text{catalyst}} RCH_2CH_2CCl_2COOCH_3$
subst. ethylene — methyl α-dichloro-γ-subst. butyrate

$Cl_2CHCOOCH_3 + 2CH_2(COOCH_3)_2 \xrightarrow{Na} CH_3OOCCH[CH(CO_2CH_3)_2]_2 + 2HCl$
dimethyl malonate — α-di-γ-di-β-mono carbomethoxy propane

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NEWSLETTER

NPA's most recent reshuffle of inventory controls over chemicals has resulted in addition of eight and removal of four from the list.

Added are cellophane, aluminum sulfate, argon, barium and lead chemicals, monochlorotrifluoroethylene, phenothiazine, and sulfonated oils.

Removed are nicotinamide, nicotinic acid, phenolic resins and molding powders, and polyvinyl acetate.

What Washington will do is a question that nags many chemical producers. The uncertainty delays decisions, forestalls commitments.

One major sulfuric acid producer is not renewing contracts with its customers—and won't, even when NPA makes up its mind on specific allocation percentages. What it will do is sell to customers on a firm amount-and-price basis, just as on a contract—but subject to modification as a result of forthcoming regulations.

The same producer, incidentally, sees indications that, while allocations of sulfur for acid are generally 90% of base, contact-process producers will, where possible, get enough for 100% operation (with no say-so, however, on where it goes). Chamber-process producers, on the other hand, will probably get only the official 90% allocation.

The clamor for decontrol is deafening NPAdministrators' ears:

Makers of fiber containers say they can meet the food, chemical and drug industries' needs during the first half of this year; but they want NPA to decontrol tin- or terne-coated steel sheet rejects, which they use for metal ends. NPA now allocates this "waste" material. The container-makers' argument: If they could get this waste without quota, they could use more of it and cut down on tin, terne and black plate.

Cadmium producers and distributors also ask to "get out from under." Their reasons: Producers have a two months' supply on hand, it's getting better, and military needs have not come up to estimates.

OPS has exempted all grades of acid fluorspar from price control; previously the commercial grade was subject to regulation. OPS says the move should encourage domestic production.

In another move, OPS shifted titanium dioxide from GCPR pricing to CPR-22 rules. The latter applies generally to chemicals, while mined products usually come under the former law. OPS's reasoning is that the titanium dioxide process is more chemical than metallurgical.

Don't look for an early settling of the Du Pont-ICI "cartel" case; chances are it won't wind up until March. Details now available indicate that the Department of Justice will ask for five-year compulsory licensing, at a "fair" royalty, of most Du Pont patents; but eight-year, royalty-free licensing of nylon patents.

Du Pont has just purchased 562 acres of land about four miles southeast of Beaumont, Texas, fronting on the Neches River. Purpose: plant expansion to cost a reported $111 million.

Union recruiting got a big boost from Secretary of Labor Tobin when he labeled unorganized workers a "menace to the American economy."

He mustered figures last week to show that wages of 45% of the nation's workers failed to keep pace with the 10% rise in living costs between January 1950 and June 1951—and $3 billion's purchasing power was thereby lost.

"It was largely the unorganized that failed to keep pace," he said. "A great many of those were in the white-collar field—a field that is still more than 85% non-union."

Thiokol Corp. came away from RFC's offices last week with a $400,000 Defense Production Act loan—eight years at 5%. This is among the first of such loans to a chemical process industry.

Proceeds will be used to build and equip a liquid polymer plant. DPA certified that the material was needed for defense; that present capacity is inadequate; and that RFC should lend the money.

Rubber tire makers have found a neat detour around the NPA order barring white side walls: They're painting them on.

A plastic paint is baked on; and while the job isn't as long-lasting as the real thing, it will satisfy most of the growing demand for white walls (25% of total demand now, as against a mere 5% ten years ago).

NPA winks at the subterfuge, but tire makers have the painting done by outside firms, just to be on the safe side.

Among the more significant technical developments is Hercules Powder Co.'s decision to install the first chlorine-from-hydrogen chloride plant, at its Brunswick, Ga., site.

The hydrogen chloride to be used as raw material is a by-product of toxaphene (chlorinated camphene) manufacture.

Capacity of the proposed plant is understood to be 35 tons a day.

A dynel (acrylonitrile-vinyl chloride fiber) spinning plant may be built near Spray, N.C. Union Carbide & Carbon Corp. holds an option on a plant site there.

Still more expansion: General Electric Co. plans to spend $5 million to up the capacity of its silicone plant at Waterford, N.Y.

The contract has already been let to United Engineers & Constructors (Phila.), and the new facilities are scheduled to come in this year.

A year-end tot-up of construction awards in the chemicals industries shows how fast they grew this past year: $1,450,297,000 compared with $507,675,000 during the preceding twelve months.

Many of the certificates of necessity haven't been activated yet, of course, so this year should see the pace maintained.

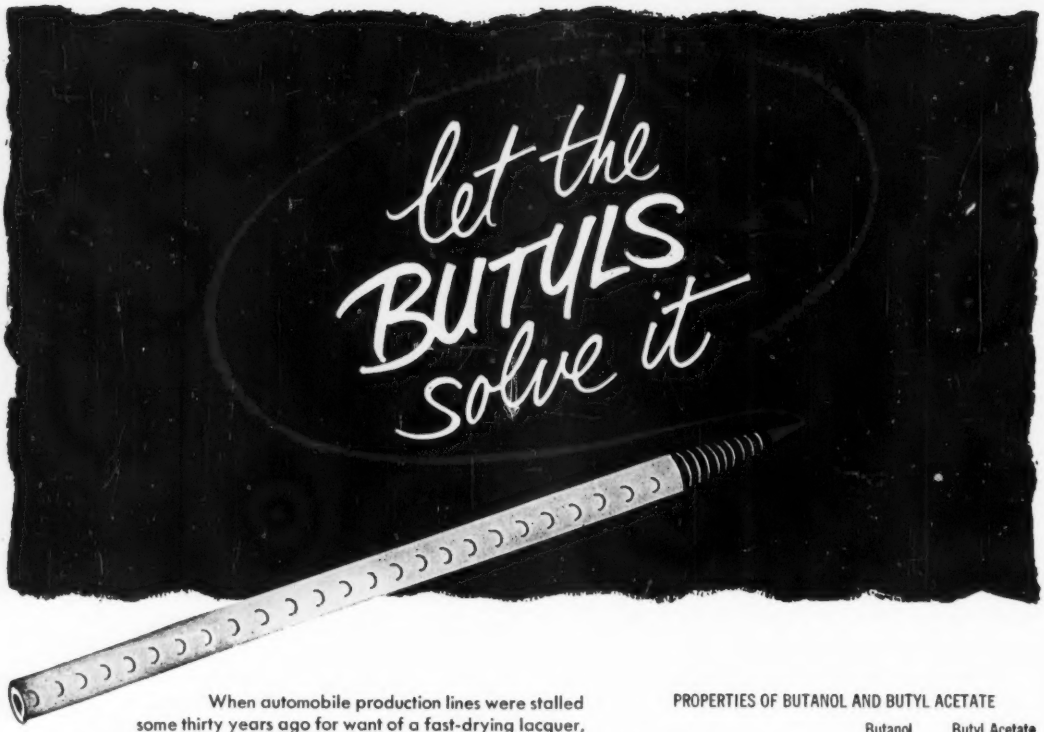
But steel will be the bottleneck—and now DPA Chief Fleischmann says that the real pinch will come later than was originally expected. Military needs have risen, and machine tools are behind schedule. That adds up to less civilian steel, in all likelihood, later in the year.

Ammonia and methanol will start pouring out of Morgantown Ordnance Works in seven to nine weeks.

Morgantown's long-disputed fate was sealed by the signing of a five-year contract between the Army and Mathieson Chemical Corp.

Mathieson has an option to renew the lease for 15 more years.

. . . The Editors



When automobile production lines were stalled some thirty years ago for want of a fast-drying lacquer, Butanol solved the problem. It was Commercial Solvents who first produced butyls by an exclusive bacterial fermentation process. Today there are still no substitutes for butyls used in making the finest lacquers. During the years other applications have been developed, of which some of the most important are listed below:

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RUBBER CHEMICALS • LUBE OIL ADDITIVES
HERBICIDES • SYNTHETIC RESINS

These are only a few of the many uses found so far for Butanol and Butyl Acetate and the future holds promise for many more useful applications. Perhaps you are stumped with a production bottleneck that might be solved by the Butyls. Send today on your company letterhead for further information or samples.

PROPERTIES OF BUTANOL AND BUTYL ACETATE

	Butanol	Butyl Acetate
Molecular Weight (calc.):	74.12	116.16
Specific Gravity at 20/20°C:	0.810—0.813	0.872—0.880
Pounds per U.S. Gallon at 68°F:	6.756	7.30
Coefficient of Cubical Expansion, per 1°F:	0.00052	0.00067
per 1°C:	0.00093	0.00121
Boiling Point at 760 mm, °C:	117.7	126.5
Vapor Pressure at 20°C, mm:	4.3	10.1
Product-Water azeotrope, Boiling Point, 760 mm, °C:	92.7	90.5
Proportion of Product, % by weight:	57.6	72
Melting Point, °C:	-89 (approx.)	-76.8
Refractive Index, n_D at 20°C:	1.3993	1.3947
Flash Point, Tag Open Cup:	116°F	102°F
Solubility in Water at 25°C, % by vol.:	8.9	0.5
Solubility in Water in Product at 25°C, % by vol.:	17.12	1.6

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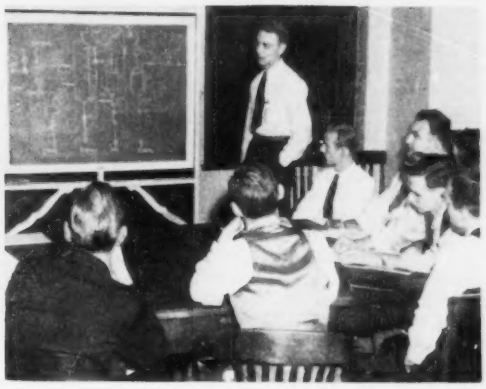
Chemical Week

BUSINESS & INDUSTRY . . . . .



WORKERS AND ENGINEERS: Production workers are also becoming scarcer in an industry already starved for engineers.

Labor: Sellers' Market

Employment of plant and production workers is generally stable in the chemical industry throughout the country.

But coming up is a short labor supply, when the anticipated defense boom taps a depleted reservoir of workers.

Skilled workers, as well as engineers and chemists, now tantalize personnel managers by their unavailability.

Checking rumors of extensive layoffs in the chemical industry, and simultaneous predictions of an impending boom, CHEMICAL WEEK surveyed the nation last week to get a clear focus on the over-all employment picture. Result: Neither is true at the moment.

The predicted boom seems to have been held in check by consumers' failure to buy. Personal spending declined $1.6 billion between the first and second quarter of 1951, while personal income rose $1.3 billion in the same period. But this means large savings and the power to buy eventually. Also, $14 billion is expected to be spent by the Government on defense in the first half of 1952. Together, these figures indicate the possibility of an uptrend starting soon, with concomitant higher employment.

Generally Stable: When and if a boom comes, the picture will change sharply; but as of now, reports from all over add up to a generally stable situation in the employment of production workers. Most areas show a slight increase in the number employed; only Boston reported a decrease, and this was held to be insignificant.

In most regions, chemical worker turnover is very low. Chemical plants in areas such as Buffalo and vicinity, where defense plants are operating at top capacity, are losing workers, and most companies are losing a certain number of men to the Armed Forces; but at present both of these diversions are minor.

Wages are definitely up in most areas—slightly or considerably, depending on the relative tightness of the local labor market. Boston and Detroit wages are fairly stable, but some sections of the West Coast, such as Seattle, are having to offer far more money than formerly.

Business Good: Business is steady or rising slightly, except in a few special industries which are more sharply up or down. Drugs are enjoying a defense boom, and employment is up in those companies. On the other hand textile chemicals and dyestuffs are off right now (*CW, Dec. 29, '51*), and the inevitable layoffs in those plants account largely for the minor drops in Boston and Buffalo. In addition, the Boston area is particularly high on inventories, which have resulted in cutbacks and the laying off of a certain number of workers in chemical plants.

Metal shortages don't seem to have any noticeable effect on the industry, and the general picture is steady and stable.

Growing Tighter: However, the over-all labor market in the industry is tight—and growing tighter. Plants are putting on extra shifts and paying overtime for lack of sufficient workers of the right type. Certain localities—e.g., Boston again—are looser, but the general national picture is one of scarce workers. (A conspicuous exception is the South. Here, where wage scales are generally lower, labor is relatively abundant.) Houston and parts of the West Coast are booming, mainly by way of new construction, and there the situation is even worse.

As yet there is no actual shortage of workers, but is getting tougher to find the right man for a job. Considerable numbers of marginal workers—old, women, disabled—are being hired. For the most part, however, workers still can be found.

The future is not so rosy. Increased defense work will tend to siphon off the better workers. New plants will create a greater need for all types of

personnel at a time when the market is already tight. Upped production will undoubtedly mean more shifts, more work days, more men needed. Where they will come from is a question already nagging industry men.

Skilled Workers: Skilled workers for chemical plants have joined engineers in a united "scarcity front." In some areas they are even harder to find than engineers. Such men are in high demand in defense industries, of course, and are commanding premium pay—when you can snag them.

In many areas companies have been forced to lower their job standards, and take men with less experience and less education than they would like. Other companies, which have not followed suit, are going to be forced to it very shortly.

To top the situation off, most companies report a lamentable lack of good apprentices for the skilled trades; and state labor boards report the same thing. This bodes ill for the future.

Engineers, Chemists: Technical men are, of course, in short supply. No one in the industry needs to be told that these days; but certain changes are going on.

Chemists are getting as hard to uncover as engineers—a development within the last year. The scarcity has now penetrated to the B.S. level in many areas, particularly for physical chemists, who are being gobbled up by the atomic energy projects.

Salaries, of course, are way up. Average paychecks for engineers right out of school range from $300 to $350 a month—more at $325 than $300. Chemists have been "selling" for a little less, but many companies indicate that there is no difference now. On top of this, periodic increases are bigger and faster than ever.

Wandering: Some companies see a tendency of their professional people to move around a little more than normal. Most lay this at the door of their being able to pick and choose; others think that it stems from rulings of the Salary Stabilization Board, which have the effect of making a man leave a job to get more money by taking a new one. Whatever the case, the result is a heretofore-nonexistent group of professional "floaters" from which companies can draw.

No Relief: Little relief is in sight as regards engineers and chemists; the schools simply aren't turning enough out. The reason is simple: not enough young people. Among many other factors, the problem is complicated by the low birth rate during the depression years. The reservoir of young people is just too low to supply all the jobs in an expanded economy.

MARGINAL WORKER: Companies are dipping into the reserves.

Barring an unexpected slump in the industry, the employment situation is certainly going to get progressively tighter from here on in—and management will have to plan accordingly.

NSF Cuts Red Tape

Government-financed research would be considerably less of a bookkeeping chore if more agencies followed the lead of the National Science Foundation. Reason: NSF has shelved the old-line contract system in favor of outright grants.

There's nothing new about research grants—except for the Government. Contracts have been the Federal method of choice for keeping track of research dollars.

Two types are in common use. One is the fixed-price or lump-sum deal, whereby the contractor agrees to do a specific job for a fixed price. Offhand this looks like a simple, straightforward arrangement, easy on both parties. But there's more to it: All work must be carefully laid out and costs closely estimated well in advance. This is a lot harder than it sounds, as many a research administrator has learned.

The fixed-price contract has advantages, but mainly for the awarder. It's easy on the Government agency, requires no supervision of actual costs incurred. Principal advocates of the fixed-price system are the Atomic Energy Commission and the National Advisory Committee on Aeronautics.

War Baby: A more familiar type of Government research contract is the cost-reimbursement system. First tried during the last war by the Office of Scientific Research and Development (and more recently by the Office of Naval Research), it provides compensation for all costs incurred in the execution of research.

Such a contract nearly always involves elaborate financial and property accounting systems and audits. On small contracts this may turn out to be more trouble than it's worth.

The NSF will dispense its $3½ million appropriation through individual grants. Like the contract, the grant may take different forms. Generally it's characterized by simple statements of methods and objectives, doesn't call for detailed financial calculations. Payment is usually made in advance, either in total or relatively large installments.

Research proposals now are being received by the Foundation. The typical grant agreement will be simple. NSF won't ask the researcher to be an accountant; he just agrees to carry on his research according to a statement of its scope and aims.

NSF Assistant Director Paul E. Klopsteg believes the grant is particularly appropriate for the support of basic research. He says, "It is anticipated that most projects . . . will arise through the initiative of individuals of demonstrated competence who have a keen interest in exploring some particular area and who lack the means necessary to carry on the work with expectation or hope of reasonably early results."

Making that means available with a minimum of red tape is the goal of the Foundation.

An Isomer Is . . .

A misunderstanding of the meaning of the term, isomer, is not confined to organic chemistry students. It is a thorn in the side of the U.S. Patent Office as well.

In a recent decision the Board of Appeals of the Patent Office (Ex parte Mowry and Seymour 91 USPQ 219) has grappled with the problem and come up with a definition* that could ease the way for patents that involve

*In the words of the Board, "The term 'isomer' is used . . . to designate compounds having the same radicals but in physically different positions on the same nucleus. Such compounds are better described as 'position isomers' and their properties are often so nearly alike as to present difficulties in identification or in separation . . ."

. . . "We do not believe that chemists skilled in the art would accept the proposition (suggested by the Examiner) . . ., that isomers in the broad sense, that is, those having the same empirical formula but with different radicals, would necessarily be equivalent, or that one would be suggestive of the other."

isomeric compounds. On the basis of this decision, only position isomers will be considered equivalents.

Generator: The definition came about in the prosecution of a patent application by Inventors David T. Mowry and Raymond B. Seymour. They sought a patent on a cyclohexylstyrene. Specifically, the inventors were claiming para-, meta- and ortho-cyclohexylstyrene.

The Patent Office Examiner cited a patent to one Franz which mentioned a number of alkyl-substituted styrenes including "dimethylterbutylstyrene." The Examiner suggested that this compound was, in effect, an isohexyl-substituted styrene, an isomer of the cyclohexylstyrenes claimed by Mowry and Seymour. Thus no invention was involved.

A 1947 decision of the Court of Customs and Patent Appeals, in re Jones 74 USPQ 152, was cited by the Examiner as the authority for his decision. In this case the relationship between the claimed compounds and the reference compound was that of isomers, with the same radicals on the same nucleus but in different positions.

But the Patent Office Board of Appeals disagreed with the Examiner. Speaking for the Board, Examiner-in-Chief Geinesse held:

"The compound of Franz is not a position isomer of the claimed compounds and the facts of the Jones case do not therefore correspond to the facts of the present situation. . . . We are of the opinion that the language used by the Court in the Jones decision should be read in the light of the facts of that case to be applicable to position isomers. . . . The rejection . . . will not be sustained."

Chemicals in Congress

It's a good bet that the 1952 Congressional session will see a discussion of changes in laws affecting chemicals in foods and cosmetics. Food additives, however, probably won't fare as badly as may their cosmetic counterparts. But while discussion will be rife, it's not probable that Congress will actually get around to amending laws. The impending election will be uppermost in solons' minds, and chemicals-in-foods-and-cosmetics is not a subject with political oomph.

The Delaney committee will hold hearings in New York next week, but the outcome of these sessions won't change matters much. Much of the earlier testimony—as well as writings attributed to Chairman Delaney—has been deflated by other publications and statements.

Both the Food Protection Committee of the National Research Council and the Food and Drug Administration itself have taken more temperate and reassuring views.

FDA's CRAWFORD: Control by administration, not legislation.

Far less comforting to industry is the situation on shampoos, permanent wave materials, hair lacquers, fingernail polish and similar cosmetics. Undoubtedly the New York testimony in hearings of the committee will blast the use of untested materials.

It is not clear at present whether Delaney's group will schedule further hearings in the immediate future. It's fairly certain, however, that the committee's final report will not be soon in coming.

Some Congressmen will probably introduce bills next week or in the immediate future. Some of these will come from friends or members of the Delaney committee. Member Miller (R., Neb.) last session introduced FDA Commissioner Charles Crawford's idea of what the law should be.

Voice of Industry: One bill which will be definitely in the running is one now being drafted by the Manufacturing Chemists Association. This probably will be publicly paraded for the first time Jan. 15 at the MCA's inter-industry conference on chemicals in foods.

The National Research Council will not offer legislative suggestions, since it deals only with basic scientific facts and conclusions.

Other industry groups are likely to ask that legislation be introduced.

In general, however, these are the main points where argument will occur:

- Some groups will ask that before new chemicals are permitted to be used in foods, FDA must give its specific approval; others will ask only that FDA be notified, but have the power of veto. This is the major question to be answered in regulating chemicals in foods.

- Restrictions or definition of what drugs can be dispensed only on prescription is another point. Some want precise definition, but others feel that this is an administrative matter that the FDA can handle.

- Third point is how much restriction there should be on use of chemicals in toiletries and cosmetics. Something analogous to the new-drug restriction has been proposed; but industry wants a mere notification-and-no-veto procedure. This point is as yet too new to permit forecast of what Congress is likely to do.

- One urgent need—which perhaps is better served by administrative action than by legislation—is a simplification of standards-making procedure for foods. Since Commissioner Crawford has outlined what is generally regarded as a much improved and wholly workable procedure, Congress may disregard legislation asked on this point.

Talk, not Action: There'll be more argument than legislative progress in Congress this spring. Those who know how slowly even urgent legislation moves are guessing that there will probably be no law enacted before Congress goes home in the summer.

One thing is certain: Mink coats and scandal will be more timely and important subjects, in the eyes of the legislators, than shampoos and bread softeners.

Ammonia Rain

John Battle, of Beaumont, Calif., meteorologist for the San Diego County Weather Corp. and the Santa Ana River Weather Corp. in Southern California, reports he has experimented successfully with a new combination of chemicals which has proved more effective than those presently used in cloud seeding work.

In a discussion with directors of the San Diego County group at Escondido, Calif., Battle reported he has devised a new formula in which he mixes ammonia gas with silver iodide. This formula has been used in airplane cloud seeding over the San Bernardino Mountains and proved 1,000 times more effective as a nucleating agent, Battle said.

He cautioned that this statement does not mean that rainfall will increase 1,000 times, but that it does mean precipitation may be obtained

from some cloud formations which previously have not been considered acceptable for rain-making operations.

The meteorologist said he expects to introduce the new formula for use with ground generators later in the season.

He told the weather corporation directors results thus far are inconclusive but he expects to complete a first tabulation in about 90 days. E. G. Guyer, engineer for the Escondido Mutual Water Co. and president of the weather corporation, expressed satisfaction with progress thus far.

Battle said that the best example of seeding results this season was on Nov. 22 when local showers in seeded areas measured up to 1 in. compared with only light precipitation north and south of the county.

In the City of San Diego where drought conditions have obtained for the past seven years, natural precipitation has increased sharply this season. For example the total from July 1 to Dec. 13 was 4.23 in. compared with a normal of 2.02 in. and precipitation for the same period in 1950 of 1.89 in.

FLEISCHMANN & TRACY: Outlook better . . . . in the future.

Steel: Construction Staller

The slowdown in erection of new facilities for the chemical industry will continue. In first-quarter allotments of structural steel for new construction, NPA has given the industry only 46.5% (32,733 tons) of its stated requirements.

In addition to this quantity, some industry groups also received steel under other classifications. For example, rubber got 5,770 tons (70.7% of its request) while textiles (including synthetic fibers) obtained 8,781 tons (45.6% of that requested).

Altogether this is a somewhat better showing than the industry made in the last quarter of 1951. But the industry is still one of the low men on NPA's steel allotment totem pole.

Indirect Influence: O. V. Tracy, Director of NPA's Chemical Division, told a recent meeting of the Manufacturing Chemists Association that the reason for this situation is the nature of the contribution of the chemical industry. At the start of the Korean crisis, certain direct basic shortages were immediately recognized and programs started for expansion of steel, aluminum, rubber and petroleum refining facilities. But the contribution of chemicals to rearmament was indirect; and they did not receive the same immediate recognition for urgency that was accorded to other, more direct basic shortages.

Advance: For the first time NPA has included chemicals in its list of "basic" industries.

The already-recognized, high-priority programs (steel, aircraft, aluminum and other light metals) had the red carpet rolled out when the allotments were handed out. They averaged 96% of their requests.

Speaking for NPA, Administrator Manly Fleischmann said that about 80% of the structural steel available for industrial expansion will go into direct military and defense-supporting industries. But even this large quantity is insufficient to fill the needs. As presented, requirements were over twice the available supply.

Claimant: The Chemicals Division of NPA is not, surprisingly, the claimant agency for steel allotted to the chemical industry for plant expansion; NPA's Facilities and Construction Bureau handles the allotment of steel for all industry. There is one exception: Allotments of steel used in processing or as a consumable raw material in manufacturing operations are handled by the appropriate industry division.

Although the Chemicals Division only serves in an advisory capacity on allotments, it is the focal point of contact between industry and NPA. Further, if the allocation that is finally arrived at is not considered suitable by the recipients, an appeal can be carried to the Requirements Committee of NPA.

A measure of the success of the various claimant groups is the total quantity of steel which each received. Chemicals were fourth. Iron and steel products ranked first, followed by aircraft and machine tools in that order.

According to Fleischmann, many of the basic chemical expansion projects which had to be deferred in the last quarter of 1951 got better treatment in the present allotment but ". . . still are not getting all of the structural steel that they require."

Speaking for the chemical industry, the Manufacturing Chemists Association told CW that the new allocations will probably hold up some expansion plans, including those with defense work. But the dissatisfaction with the 46.5% allowed has to be tempered with the fact that there is just so much steel to go around.

Better Outlook: Prospects are that in the second quarter of 1952, the allocation for the chemical industry can be upped somewhat, even though it will be the "squeeze" quarter, when all things using metal will begin to be turned out on full production schedule. The third quarter of 1952 should see an even further improvement. At least, the major allotments of steel for the aluminum and steel plant expansions will be past history.

In addition there should be an increasing flow of steel from the new facilities that are now well towards completion. And much of this can be made available for chemical plant expansion.

In case the Korean affair should turn hotter, all bets are off. The military still has first call on steel, and a large part of industry must get along with what is left.

Plague On Both

The NLRB in effect said a plague on both your houses to management and labor, in ruling that an employee of Monsanto Chemical Co., St. Louis, must be reinstated and given full back pay. Legally the board ruled that the provisions of an arbitration award cannot be used to deny an employee his rights under Taft-Hartley.

The employee was fired for not paying union dues by a certain date as directed by an arbitrator in accordance with an arbitration agreement between the company and the International Chemical Workers (AF-L) providing for a maintenance of membership clause. Even though the man had quit the union prior to the effective date of the clause, the union asked he be fired and the company did so.

Now the NLRB has set aside the arbitration decision and directed both the company and the union to reinstate the man with full back pay and full seniority. The board relied, legally, in disregarding the arbitration award, on a Supreme Court decision in a former case involving Consolidated Edison.

Shifting Picture

The sales and production pattern for chlorine changes so rapidly that the day-to-day picture quickly becomes distorted and is relegated to the role of history. The latest report on the industry's status was presented before the Chemical Market Research Association at Wilmington, Del., by Geo. D. Grogan, Penn Salt's sales manager for industrial chemicals.

According to the Grogan's statistics there are now 63 U.S. chlorine plants —35 with a production capacity of greater than 50 tons per day. Only 45% of the total production capacity of over 7,100 tons per day can be liquefied and moved from one plant to another. But a large portion of this liquefied material is still captive production: He says that only 35% of the total chlorine manufactured is salable.

Double-Double: Roughly speaking, chlorine production capacity has doubled in every decade since 1910; and this growth rate promises to continue. Planned production capacity by 1953 is 10,800 tons per day. Despite this tremendous production increase, there is continually less chlorine for direct sale.

The reason for this, according to Grogan, is the extremely low price that chlorine commands when sold as such. Producers therefore are always looking for ways to fatten the profit margin. One way: Buy out one of your major consumers who has upgrading facilities. Another: Develop a process and build your own upgrading unit.

Penn Salt has used both methods. Its purchase of Sharples is an example of the first, while its developments in the manufacture of chlorinated insecticides provide an example of the second.

The second procedure is also the means used by Dow, in its expansion to the point where it is the largest chlorine producer. Grogan ranks the ten largest producers in the following order:

1. Dow Chemical Co.
2. Columbia-Southern Chemical Corp.
3. Diamond Alkali Co.
4. Westvaco Chemical Div., Food Machinery & Chemical Corp.
5. Pennsylvania Salt Mfg. Co.
6. Mathieson Chemical Corp.
7. Solvay Process Div., Allied Chemical & Dye Corp.
8. Wyandotte Chemicals Co.
9. Stauffer Chemical Co.
10. Hooker Electrochemical Co.

Where To? The next logical question: Where is all of this material being utilized? Grogan has set up the following box score as of the present moment:

Pulp and paper	15%
Chemicals using chlorine in manufacture but which do not contain chlorine (glycols, etc.)	33%
Chemicals which contain chlorine (vinyl chloride, etc.)	31%
Insecticides	7%
Water and sewerage	3.5%
Textile bleaching	2.5%
Miscellaneous	8%

At present there is more demand for chlorine than supply. But as new plants come on stream there probably will be momentary excesses; some of the consuming plants may not be finished at the time new chlorine capacity is ready. Grogan notes that present hopes are that a supply-demand balance will be achieved by 1953.

Dig Out Scrap

A critical shortage of scrap threatens to close down steel furnaces within the next few weeks, Defense Mobilizer Charles E. Wilson and DPA-NPA Administrator Manly Fleischmann warned industry last week.

Already scrap piles in the Cleveland-Pittsburgh-Youngstown area have sunk to new lows, and some 150 open hearth furnaces in the Monongahela Valley have less than a day's supply on hand.

WILSON: Scrap salvage is everybody's business.

Wilson and Fleischmann list these "must" jobs for all types of industry:

- Intensify present iron and steel scrap recovery programs.
- Launch non-ferrous scrap recovery so that copper, brass, bronze, aluminum, lead, and zinc can also be salvaged.

Said Wilson: "Manufacturers who do not handle metal goods can help in this emergency. Such industry does generate scrap, and although in some cases the amount of scrap may seem small, in aggregate it represents very real volume which in this time of shortages is essential to the defense program."

More Nickel Coming

The free world's production of nickel for the full year of 1951 approximated 295 million lbs., an increase of more than 10% over 1950, according to John F. Thompson, chairman and president of The International Nickel Co. of Canada, Ltd.

Canadian producers were responsible for 275 million lbs., or more than 90% of the free world's total last year. In 1950, Canada produced 247 million lbs. of nickel in all forms.

Reliable estimates of nickel production in Soviet Russia and satellite countries are not available, but the free world's total is likely several times greater than that behind the Iron Curtain.

Measures to maintain this superiority in nickel supply will assure continuance of the amounts now avail-

Heating with Atoms

WORLD'S FIRST ATOMIC central heating plant has just gone into operation at Britain's Harwell atomic research center. A large experimental atom pile is now heating an 80-office building so successfully that it may replace the coal bin in several other buildings. Water is heated by a heat exchanger in the outlet air duct of the pile's cooling system, and then passed by a closed circuit to a second exchanger which heats water used for radiators and the domestic hot water supply. There is no danger from radioactivity.

able, are expected also by 1954 to provide an increase of approximately 30% over that available before the Korean conflict.

• **Falconbridge Nickel Mines Ltd.:** Canada's second largest nickel producer has embarked on an expansion program to increase maximum production to a rate of 40 million lbs. annually; it will require a minimum of three years to complete. Falconbridge's annual output is now approximately 25 million lbs.

• **Sherritt Gordon Mines Ltd.:** Its deposits in the Lynn Lake area of Northern Manitoba will be initially worked by the end of 1953. Its annual capacity of 17 million lbs. of refined nickel is expected to be attained in 1955. The company has entered into a contract with General Services Administration (U.S. Government) for delivery of a substantial portion of its anticipated nickel output during the first five years of production.

• **International Nickel:** The company had, by last July, achieved an increase of its nickel production by 12 million lbs. annually. These new facilities brought the company's current rate of production to 252 million lbs. annually.

Domestic Moves: Early last year, General Services Administration completed arrangements for reopening the U.S. Government's Nicaro nickel plant in Cuba. The plant, with an annual capacity of 30 million lbs., was operated from late 1943 to early 1947. Initial production at the reactivated plant is expected some time this year.

Defense Materials Procurement Agency reached an agreement with National Lead Co. for increased production of U.S. nickel. A new cobalt, nickel and copper separation plant at Fredericktown, Mo., is slated for operation in the first half of 1953. This is expected to add a total of nearly 9.3 million lbs. of nickel to National Lead Co.'s production over the next five years.

. . . **And Foreign:** Increased output is anticipated this year from the nickel mines in New Caledonia, in the South Pacific. Operated by the French firm S. A. Le Nickel, the mines expect to produce more nickel in 1952 than the estimated production of 13-14 million lbs. last year. The mines and plants are currently being modernized and further developed.

In addition to the increased production already foreseeable, wide exploration and prospecting for new nickel deposits are in process by International Nickel and others in Canada, Africa and elsewhere.

Higher Price: As a result of substantially increased labor and other production costs, the world base price of electrolytic nickel advanced 6¢ a lb. during 1951, bringing the U.S. base price to 56½¢ (including the 1¼¢ U.S. import duty).

Supplies of nickel to industry were rationed during all of last year. In addition to supplies for military and civilian requirements, deliveries of nickel were made to Government stockpiles. Military and military-supporting demands were large, and the impact of these requirements was at times very heavy by virtue of the necessity of filling the pipe lines of defense; at such times the supply of nickel for the civilian economy was small.

Conservation the Key: Producers and users of nickel are continuing to attack the task of nickel conservation. Their research, development and sales departments have developed ways in which smaller quantities of the metal could be applied for the job at hand.

Production of alloy steels was approximately 1.4 million ingot tons higher last year than in 1950. Under the direction of Government agencies, downgrading of alloy content has occurred in an effort to make more nickel available for jet engine alloys and other components necessary in a defense economy.

Total production of all types of stainless steels in 1951 was greater than in any previous year, with consumption of the chromium-nickel grades for military uses at a record high. The aircraft industries of the U.S., Great Britain and Canada, with their developments of jet propulsion, are taking larger amounts of stainless steels of higher nickel content. Navy, Army and Atomic Energy Commission requirements for these steels for equipment and materiel have been heavy.

In addition, the chemical and petroleum industries have been allowed large quantities for use in the expansion of defense-supporting facilities. Therefore, chromium grades have been substituted, where possible, for civilian applications in an effort to conserve nickel; and this has been responsible for the increase in the total output of all varieties of stainless steels.

Production of heat- and corrosion-resisting high-nickel alloy casting was substantially higher last year, reflecting jet engine components and industrial furnace demands.

Military demand has necessitated the elimination of nickel-plating for many civilian applications.

EXPANSION. . . .

Nitrofurazone: Norwich Pharmacal Co. has just completed a 300-ft. addition to its nitrofurazone plant at Norwich, N. Y. The new unit will permit increased production of nitrofurazone crystals, which are used as a disinfectant in bandages.

•

Paper: The paper mills at Chicoutimi, Que., which have been closed for twenty years, are to be reopened by Saguenay Pulp & Paper Co.

Originally operated by the now-defunct Quebec Pulp & Paper Corp., the mills are the property of the Quebec Government. Saguenay is to pay an annual rent of $34,000 for plant and machinery as well as $50,000 per year for electrical development at Point Arnault, Que. Wood will be provided from 1,400 square miles of forestry concessions for which Saguenay has agreed to pay $1.2 million.

•

Polyethylene: Construction is slated to begin next spring on Canada's first polyethylene plant. To be built for Canadian Industries, Ltd., at Edmonton, Alberta, the new unit is slated to cost $13 million with first production due late in 1953.

COMPANIES. . . .

International Minerals & Chemical Corp.: All of the common stock of Eastern Clay Products, Inc., has been acquired by International Minerals. This acquisition, with net sales of about $3 million, produces clays for foundry uses, bentonite and refractory clays.

The transfer was made by the exchange of 83,513 shares of International common for the 47,697 shares of Eastern's outstanding common.

LABOR . . . . . .

United Gas, Coke & Chemical Workers (CIO) recently won an NLRB election held at Minnesota Mining & Manufacturing Co.'s Fairmont, Minn., plant. Only 80 workers were involved in the election.

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A wage boost of 4 cents an hour in the Paint Division of Pittsburgh Plate Glass Co., Newark, N.J., is another recent gain of Gas, Coke & Chemical. The rise was obtained when the contract, which runs until next March, was voluntarily reopened by the company.

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More activity in Gas, Coke & Chemical led to a new contract with the Plastilight Co., Stamford, Conn. Ten major clauses were in the new pact led by a 10-cent-an-hour wage hike, retroactive to July 23, but subject to WSB approval. Other provisions covered holidays, vacations, paid lunch time, leaves of absence, and premium pay.

•

The recent victory of Gas, Coke & Chemical at the Perth Amboy plant of the Carborundum Co. was extremely lopsided—206 to 9 in favor of GCC. Organizational committees are now meeting with rank and file to draw up contract demands.

•

Seven employes of Davison Chemical Co., Perry, Ia., were recently reinstated and given a total of $1,675 in back pay as a result of arbitration procedure. The workers had been discharged over a seniority issue; Gas, Coke & Chemical filed grievance procedures; a plant grievance committee was unable to settle the dispute with the company; an arbitrator was called in. He was Clarence Updegraff, law professor of the University of Iowa. After a hearing, Updegraff ruled that Davison must reemploy the men without loss of pay for the 27 days involved. The company agreed at once to comply with his decision.

•

Gas, Coke & Chemical's new contract with Foote Mineral Co., at Exton, Pa., calls for a 7-cent wage increase (subject to WSB approval on 4 cents of it), new and improved sick-leave plan, more specific job classifications, and an increase in shift differential, among other provisions.

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Three Canadian locals of District 50, United Mine Workers, have won wage increases. Employes of the Liquid Carbonic Canadian Corp. obtained a 17-cent-an-hour increase plus vacations up to three weeks.

A 7-cent increase was won by employes of Le Pain Moderne Canadian, with other benefits such as 10 paid holidays and a 4-cent hourly shift premium. At Dominion Tar & Chemical Co. workers were granted a 13-cent hourly increase plus job adjustments up to 17 cents an hour.

All three contracts provided for seniority, check-off, vacations, and most standard benefits.

FOREIGN. . . . .

Brazil: The Brazilian Ministry of Agriculture estimates fertilizers and sprays needed to meet the country's 1951-1952 crop requirements will total almost 16,000 tons. Needs include: benzene hexachloride (1,776

FOREIGN . . . . . .

tons), DDT (1,290 tons), metaldehyde (50 tons), and methyl bromide (200 tons). Also 3,300 tons of copper sulfate and 8,400 tons of sulfur will have to be imported.

•

Australia: Exports of Australian drugs, chemicals, and fertilizers for the third 1951 quarter (July through September) totaled more than $3.4 million, an increase of almost 50% over the 1950 figures. Foreign sales of oils, fats, and waxes increased proportionately, were valued at $3.2 million.

There was a similar jump in imports. Some of the leaders were: proprietary medicines $1.9 million ($1.2 million in 1950); dyestuffs, $905,000 ($473,000 in 1950); non-spiritous essential oils $563,000 ($256,000 in 1950).

The value of imported argols jumped almost eight fold, and purchases of soaps of all kinds tripled. Insecticides and disinfectants increased more than 100%. Bucking the trend: Fertilizer imports dropped $400,000.

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Pakistan: The Industrial Advisory Committee in Karachi has set up two sub-committees: One will help local pharmaceutical manufacturers produce raw materials and containers to compete with imported products; the other will speed up the exploitation of indigenous raw materials.

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Sulfuric Acid: A new company—the United Sulfuric Acid Corp.—is being formed in Britain to produce sulfuric acid from anhydrite with cement as an important by-product.

The process is the same as that operated by Imperial Chemical Industries, Ltd. at Billingham for many years, and is being undertaken by 11 companies (including I.C.I. and Fisons, Ltd.) to meet the shortage of sulfuric acid due to the sulfur scarcity. To be located at Widnes, the new plant will not be ready for production until 1954.

Meanwhile at least one company, Fisons, Ltd.,* is attempting to substitute nitric acid for sulfuric acid in solubilizing phosphate rock to make fertilizers.

•

Rayon Woodpulp: South Africa's state-owned National Development Corp. plans to make rayon woodpulp in partnership with Cortaulds, Ltd. and Snia Viscosa of Italy. The newly formed company—South African Industrial Cellulose Corp.—has acquired ownership of a number of Eucalyptus

* Its new Immingham sulfuric acid plant is now running at ⅔ capacity because of insufficient sulfur supplies.

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FOREIGN . . . . . .

Seligna plantations. Cortaulds and Snia Viscosa will utilize the output of the proposed factory themselves at first, but the potential requirements of a local rayon producing industry are being kept in view.

•

Phthalic Acid: Large-scale production of phthalic acid from Austrian naphthalene has been begun by Vienna's Chemische-Hilfstoffe-Ges.m.b.h. Chemin. By the first of the year the company's output of phthalic acid is expected to be sufficient to meet the total normal requirements of Austria's varnish and plastics industry.

KEY CHANGES...

M. M. Biddison: From vice president to president, General Chemical Division, Allied Chemical & Dye Corp.

H. F. Hey: From general manager, electro-technical products division, to vice president, Sun Chemical Corp.

Francis Boyer: From executive vice president to president, Smith, Kline & French Laboratories.

O. J. May: From vice president in charge of operations to executive vice president, Smith, Kline & French Laboratories.

H. J. Voorhies: To vice president, Esso Standard Oil Co.

Cecil Morgan: From vice president to director, Esso Standard Oil Co.

Melvin J. Henry: From senior executive, R. H. Macy & Co., to general sales manager, United Lacquer Mfg. Co.

Emil Spoerry Jr.: From secretary-treasurer and director to executive vice president, Arco Co.

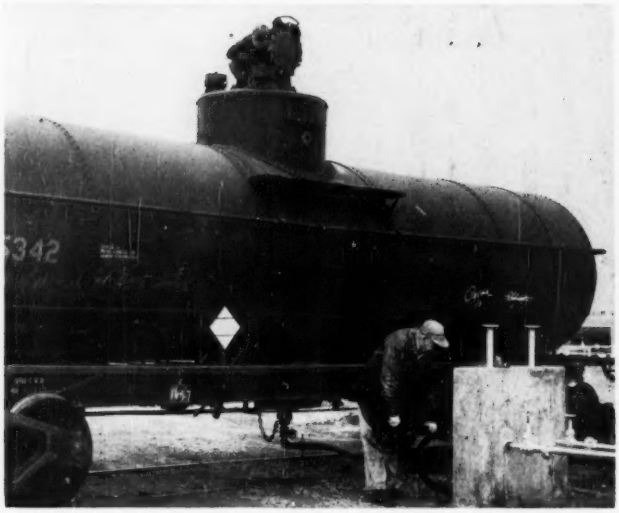
G. R. Monkhouse: From general manager to vice president, Western division, Shell Chemical Corp.

Richard Giovine: From associate editor, *Popular Science Monthly*, to advertising manager, industrial chemicals division, Commercial Solvents Corp.

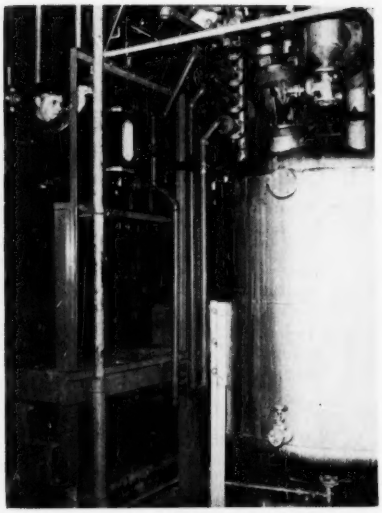
Robert L. Nissen: From advertising and publicity manager, Flexonics Corp., to advertising and promotion manager, Tri-Clover Machine Co.

Edward Hartshorne: From assistant director of research, Winchester Repeating Arms Co., to manager, research and development department, Olin Cellophane Division, Olin Industries.

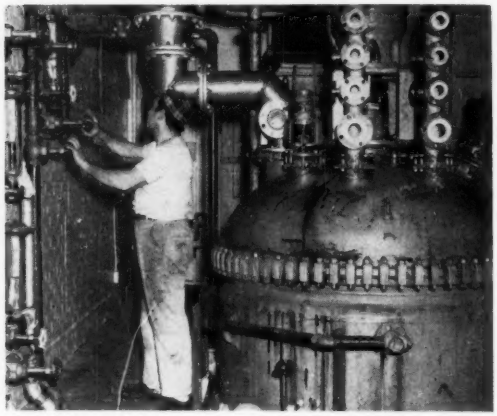
R. P. Ganchan: To manager, Houston plant, Arco Rubber Processors.



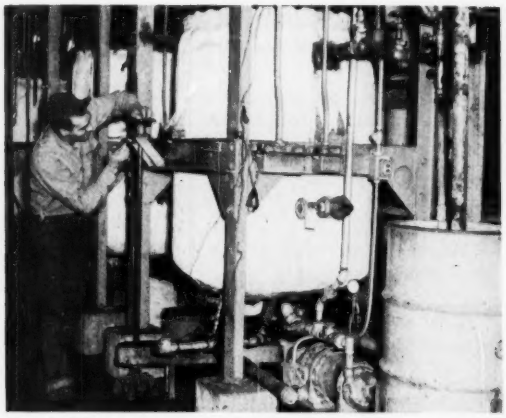
1 BUTADIENE is run to storage as first step in ARRC group's manufacture of emulsion paints. Location: American Polymer plant in Illiopolis, Ill.



2 LATEX PRODUCTION begins as monomers enter the reactor.



5 MEANWHILE, in Leominster, Mass., production begins on an acrylic monomer which serves as a protective colloid.



6 MONOMER IS PACKAGED in 55-gallon drums for shipment to Peabody, 50 miles away.

SPECIALTIES . . . . . .

Indoor, Outdoor, All Around the House

Indoor latex paints, sales stars in the paint making firmament, are about to get a fellow comet—outdoor emulsion paint. And it's a definite possibility that this may surpass the indoor material in selling brilliance.

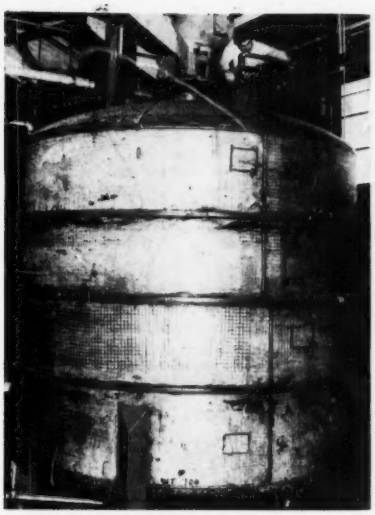
The American Resinous Chemical group* has just about completed testing, and will soon introduce an outdoor formulation.

Where latices in indoor paints are generally butadiene–high styrene or plasticized styrene (*CW, Aug. 25, '51*), ARCC's outdoor emulsion has a terpolymer base. Two of the three monomers are styrene and butadiene; the third is identified only as a "chemical relative of vinyl chloride."

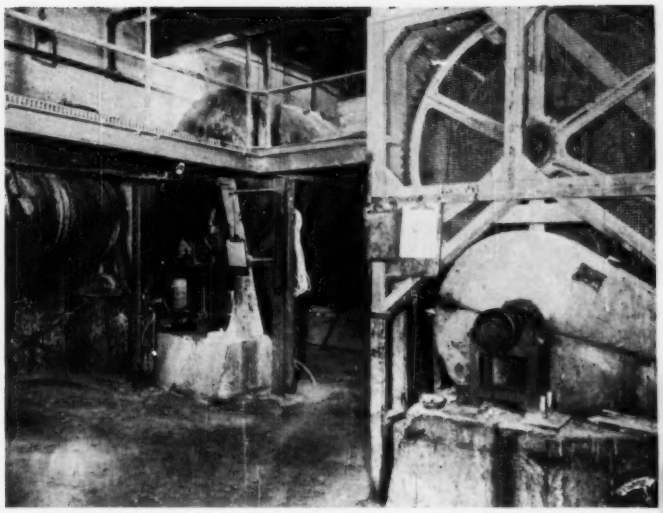
The actual paint business is a sideline for American Resinous—but a necessary one to carry out a sales philosophy of cultivating small as well as large buyers. Big manufacturers buy raw materials for their own production, but smaller firms, with relatively puny promotion funds, are reluctant to start emulsion paint production "cold." For them, ARCC makes the paint, which is retailed under the private brands. The paint manufacturer can switch over to making it himself when and if he wants to.

All major producers have outdoor emulsions in the laboratories, but ARCC's formulation will be the first on the market. The overwhelming sales possibilities for such outdoor paints point up the fact that "to the 'firstest' belong the spoils."

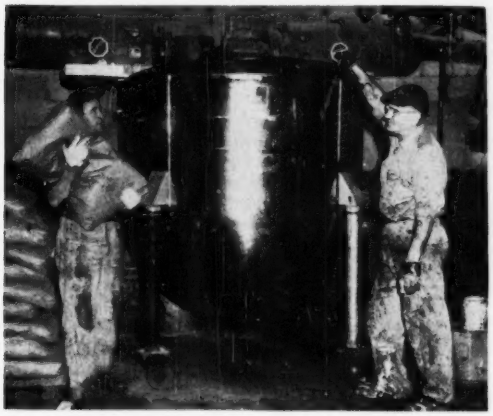
* American Resinous Chemical Corp., American Polymer Corp., American Monomer Corp., Snyder Chemical Corp.



3 "SALLY RAND" operation involves stripping unreacted monomer.

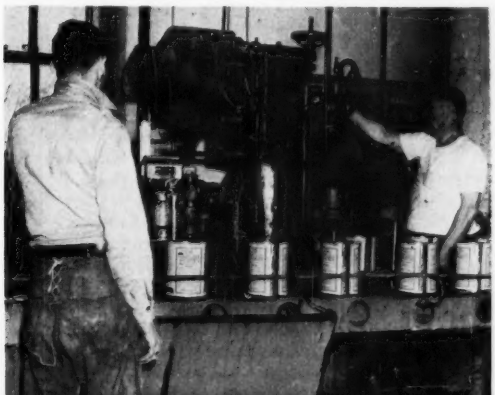


4 AT PEABODY, Mass., latices and pigments are prepared for formulation steps. Shown here: pigment grinding.

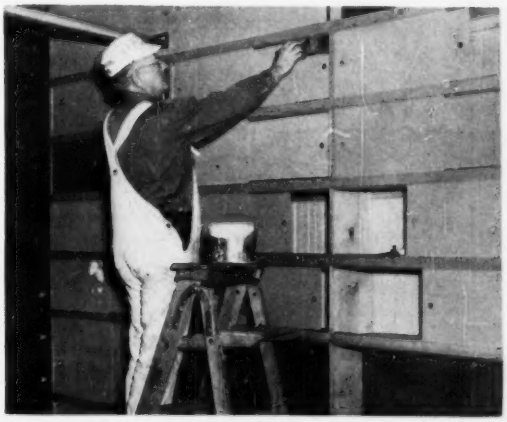


7 FORMULATION BEGINS at Peabody, as first ingredients are poured into mixing kettle.

8 FINAL QUALITY CHECK comes just before finished paint is loaded into drums.



9 SOME PAINT isn't shipped in large barrels; instead, is packaged in retail-size containers.



10 THE ACID TEST: ARCC supplements usual shingle tests by using paint on its own factory walls.

Air Force Search

Though the Navy and commercial airlines are using non-flammable hydraulic fluids, the Air Force is not. Recently CW asked why not. Here is the Air Force's answer, its requirements in such formulations.

Engineers at the Air Force Air Development Center, Wright-Patterson Air Force Base, Dayton, O., told *CW* that the Air Force is not using any non-flammable hydraulic fluid simply because none has been developed to meet its specification MIL-F-7100.

The USAF is not surprised that aviation specialties manufacturers wonder why it is not using such a fluid in its aircraft since formulations have been disclosed (*CW, July 7*). And the Navy is using H-2 hydraulic fluid which meets its own special specification MIL-F-7083 (Aer).

The Air Force, however, thinks its problem is different.

"USAF's requirements in many respects are more severe than those of commercial airlines or the Navy, and stem from differences in operations," AF engineers say.

"The others appear willing and able to sacrifice performance in the fluids to achieve varying degrees of fine resistance. The Air Force, on the other hand, maintains the requirement that aircraft be able to operate from −65F to +160F (plus any temperature rise in the equipment, which reaches 300F in some areas of the hydraulic systems) without significant loss in reliability. The present fluid used by the USAF, Mil. Spec. MIL-0-5606, will permit such operation.

"Any fluid, even though it is completely non-flammable; non-corrosive; non-toxic; inert to rubber, paints and gaskets, etc., incapable of allowing this operation could certainly not be considered acceptable by the USAF," engineers state.

What It Wants: Mil. Spec. MIL-F-7100, which describes USAF requirements, has been established as a guide for manufacturers to formulate blends that would approach these requirements. These are:

- Fluid must be non-toxic.
- Viscosity of 8 centipoises (min.) at 130F and 2500 centipoises (max.) at −65F.
- Non-corrosive to steel, aluminum, magnesium, copper, and cadmium-plated steel after prolonged usage in system at its highest operating temperature.
- Exhibit prolonged stability at −65F so as not to gel, crystalize, precipitate or solidify.

SPECIALTIES . . . .

• Shall be a good lubricant for hydraulic pumps.

• Pour at −75F or below.

• Exhibit stability when mixed with water so as not to become corrosive to metals, cause gelling, crystallization or separation of any of the fluid components.

Other requirements of the specification are based on economy; any major change of existing aircraft hydraulic systems would require a major expenditure of critical man-hours. Some of these are:

• Fluid shall exhibit no deleterious effect on rubber presently used in the hydraulic system.

• Fluid should not attack paint, electrical insulation or cements.

What It's Tried: The USAF has evaluated practically every class of material, including glycol-water formulations, dibasic acid esters, silicones, silicates, borates, chlorocarbons, fluorocarbons, mixed chlorofluorohydrocarbons, phosphates and sulfur-containing organics.

Many excellent non-flammable fluids have been prepared but they either fail to meet the requirement of effect on standard rubber packings or are too toxic. Presently fluids prepared from either the silicones, silicates, phosphates or halocarbons appear most promising and several blends are awaiting testing in a hydraulic system mock-up.

In general, the major advantages or disadvantages of the many nonflammable hydraulic fluid base stocks, according to Wright-Patterson, are:

Water-glycol mixtures: Formulations evaluated to date all exhibit poor stability toward oxidation corrosion, even at 160F (MIL-O-5606 is stable at 250F), questionable low-temperature stability, poor hydrolytic stability and magnesium corrosion. Further, the fluid exhibits unsatisfactory effects on the rubber "O" rings used in struts of USAF aircraft. The Air Force does not want to change all equipment in the hydraulic system, removing magnesium from such parts as would come in contact with fluid of this type. Furthermore, in an attempt to minimize maintenance problems, the USAF wants to use only one hydraulic fluid; glycol-water mixtures, being unsatisfactory in aircraft struts, would require two hydraulic fluid systems.

Organic phosphorus compounds: Fluids prepared from base stocks can be made to conform to MIL-F-7100, says the USAF, with exception of effect on rubber packings. However, to change all rubber packings, gaskets, etc., in present aircraft to operate

SPECIALTIES . . . .

with fluids of this type would mean many man-hours of effort. These types appear promising, since in new aircraft, necessary rubber components could be supplied that would be suitable with both mineral oil fluids and organo-phosphorus materials. During overhaul of aircraft, such changes could be made, minimizing the man-hours required for a complete change over to a non-flammable fluid of this type.

Organo-silicates: These fluids need further developments to produce a satisfactory non-flammable fluid. When properly inhibited, they exhibit many desirable properties such as thermal stability, resistance to oxidation corrosion, excellent viscosity-temperature characteristics and low shear. However, they are flammable and show undesirable effects on present hydraulic system rubber packings and gaskets.

Silicones: Such materials, the USAF claims, are poor lubricants, flammable and affect rubber packings. However, recent research effort has indicated that lubricity and flammability characteristics may be improved to the point of meeting USAF requirements.

Diesters: Fluids of this type can be prepared using proper inhibitors. Although flammable themselves, the so-called "snuffer additives" can be used to impart non-flammability. Considerable work has been done on blends of these materials and chlorofluorocarbons. The halogenated hydrocarbons are expensive, have poor viscosity-temperature characteristics, and affect rubber adversely. But when incorporated in blends of diesters and various inhibitors, a satisfactory fluid can be obtained. Additional research is necessary to produce chlorofluorocarbons having higher boiling points, lower vapor pressures and decreased costs.

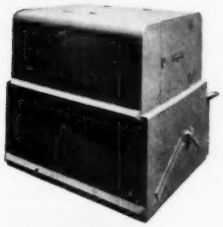
Some Hope: Engineers at the Air Development Center say that the results of their research and development program point to this:

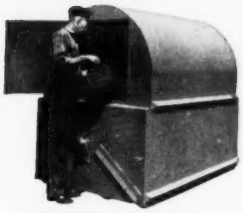
1. Non-flammable hydraulic fluids are available at the sacrifice of one or more of the desired properties.
2. Continued effort should produce soon a fluid meeting all USAF requirements.

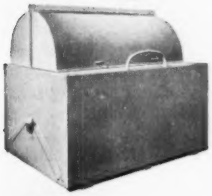
•

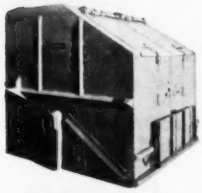
Cold Wave Patents: Everett G. McDonough's patents (2,577,710 and 2,577,711) covering methods and materials used in both home and professional cold waving of hair, have just issued after more than 10 years in the Patent Office. Originally assigned to Sales Affiliates, Inc. (New York City), which still hold rights to

How The Dempster-Dumpster System Cuts Cost of Equipment . . . Eliminates Re-Handling of Materials!









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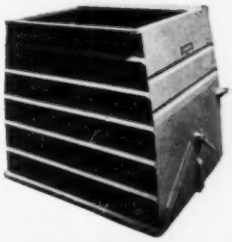
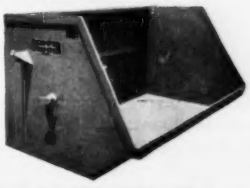




DEMPSTER BROTHERS, 212 Dempster Bldg., Knoxville 17, Tenn.

SPECIALTIES . . . .

them subject to certain rights and title held by Procter & Gamble, the patents had been the subject of litigation between Sales Affiliates and the Patent Office, but at a recent trial, a Federal bench decision supporting the patent claims in every essential detail was handed down. P&G has a license under which it manufactures and sells it product "Lilt"; and several other manufacturers, including Lever Bros., Daggett & Ramsdell and Lehn & Fink, have secured licenses.

•

Pennsalt Goes West: Pennsylvania Salt Manufacturing Co. of Washington has just begun operations at its new industrial cleaners plant in Portland, Ore. It will make a line of specialty metal cleaners as well as cleaners for the transportation, industrial and general maintenance fields. The Wyandotte, Mich. plant of Pennsalt formerly supplied this area.

•

Bottled in Polyethylene: Among recent developments in use of polyethylene bottles are the following:

• **Battery fluid:** Interstate Commerce Commission has approved shipment of corrosive battery fluid in polyethylene bottles of capacities up to one quart.

• **Dry Lubricant:** Moly-Lube, a dry lubricant or friction-reducing additive based on molybdenum disulfide, is now being marketed in a 4-oz. squeezable bottle (Plax Corp., Hartford, Conn.) by the manufacturer, Moly-Lube Products (Great Neck, N.Y.).

• **Acid Solution:** Enthone, Inc. (New Haven Conn.) is also using Plax bottles—the standard 8-oz. Boston Round—for its alkali cleaner test set, containing strong sulfuric acid, which is used in testing alkali cleaning solutions for the metal finishing and electroplating industry. The bottle is also used for alkalis to test acid pickling solutions.

•

Another Latex Paint: American-Marietta next month will launch its new latex-type interior paint, called Rev Satin, on a national scale.

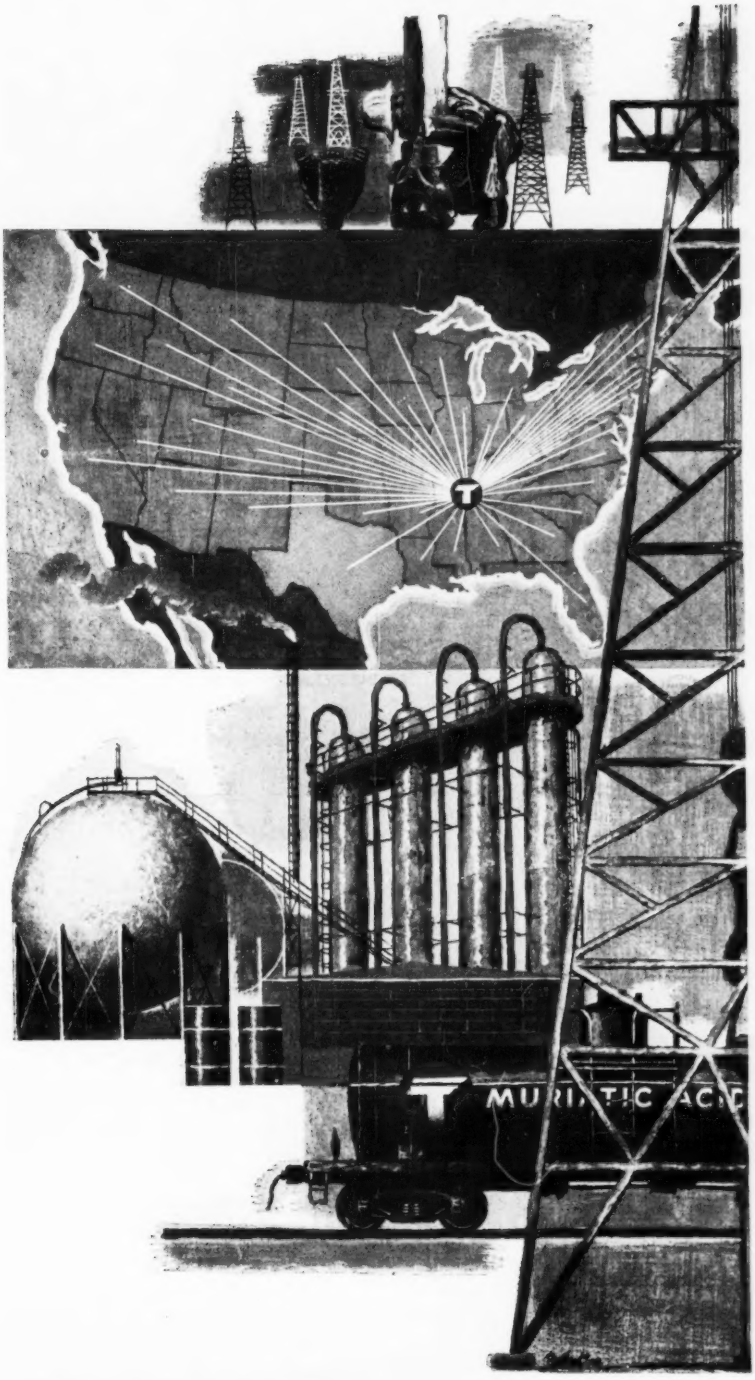
•

Polystyrene Finish: A new finish for polystyrene, called C 5138, has been developed by United Lacquer Manufacturing Corp. (Linden, N.J.). Available in all standard colors, in gloss, semi-gloss and flats, the product can be applied by spray or dip, is said to be easily machined.

•

Plant Expansion: Texize Chemicals, Inc., is constructing a new addition to its Greenville, S.C., plant, second expansion in two years.

THERE'S A TOUCH OF TENNESSEE IN TEXAS OIL



Oil has brought great wealth to the Lone Star State, to Oklahoma, Pennsylvania, Illinois, Louisiana, California, and other oil producing states. Products from Tennessee are important to the oil industry wherever it is . . . Tennessee's Muriatic Acid for acidizing the wells, pig iron and ferro alloys for hard drill bits, strong derricks, tank cars and durable pipe.

Many other products from Tennessee are used by Texas industries . . . Acetic Acid for photographic and bleaching processes . . . Benzene Hexachloride for pesticides to protect cotton crops . . . Sodium Benzoate as a preservative. In fact, Tennessee's products are used by key industries in every state in the union. That's why Tennessee is known from Coast to Coast as an industry serving all industry.

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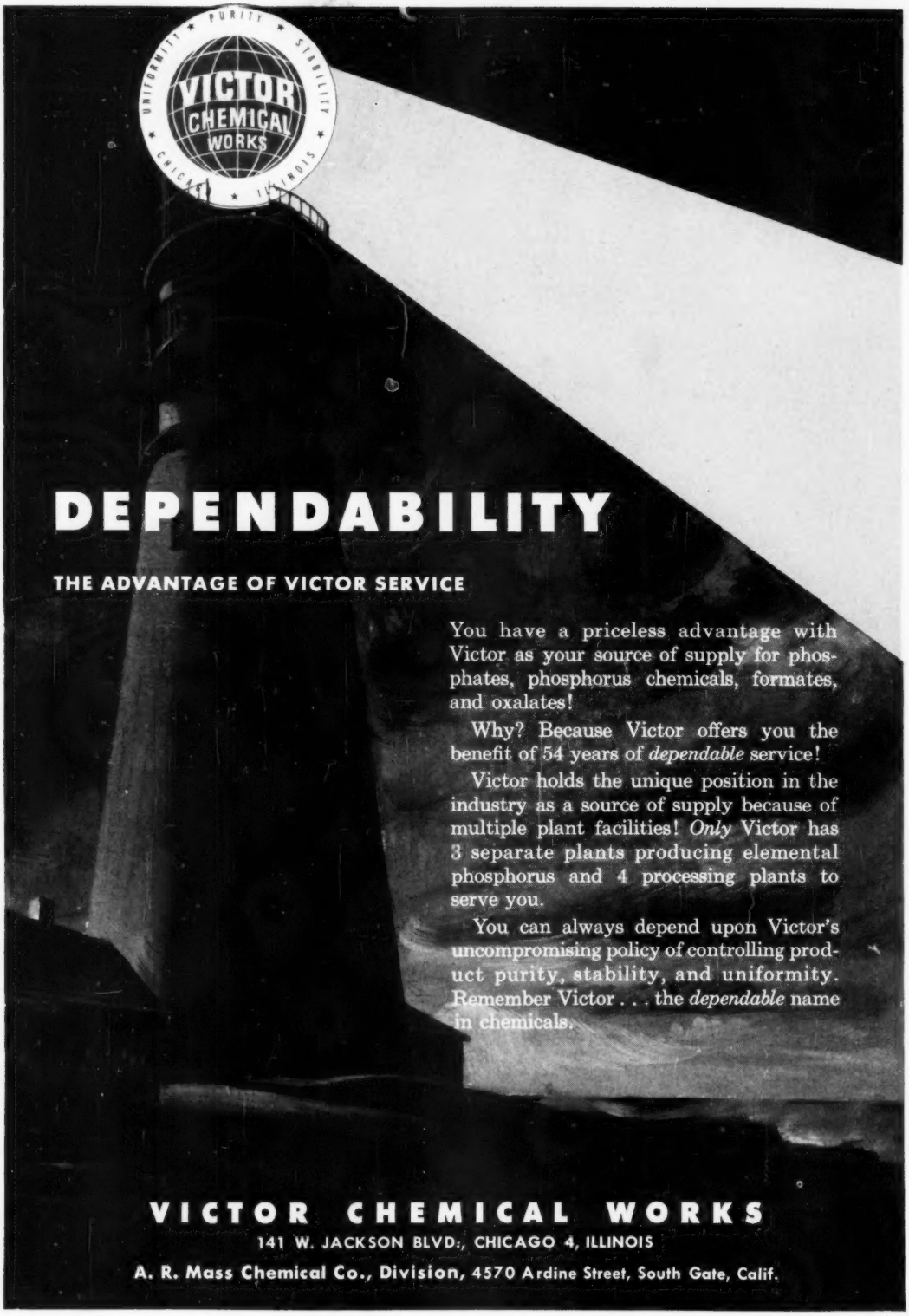
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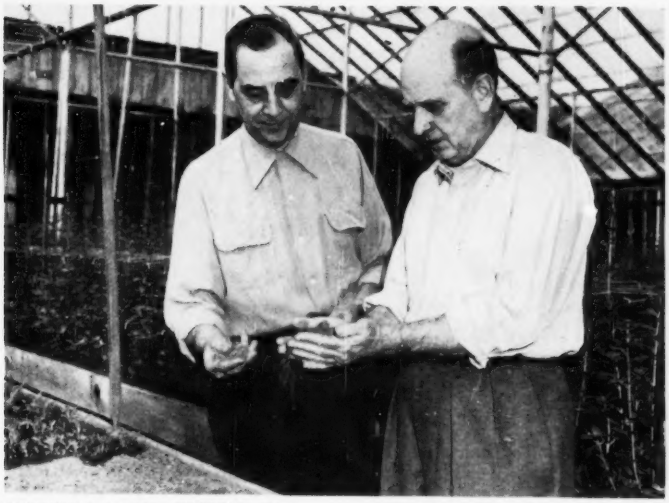


HOCHWALT AND THOMAS: From a morning walk, a new field for chemistry.

Creeping Up on Nature

A new synthetic resin for conditioning soil—hydrolyzed polyacrylonitrile—opens up a new field for the chemical industry.

Its producer, Monsanto, told agricultural researchers the material looks better than time-honored compost, manures, peat moss; will make pilot plant quantities available for further study.

Prospective markets are home gardens, greenhouses, truck farms, areas with badly crusted or saline soils, and erosion control.

True research men don't shed their bent with their lab coats: Probing minds keep no hours, recognize no boundaries.

Because that is so, and because Charles Thomas and Carroll Hochwalt belong to that rare clan, Monsanto Chemical Co. plans to make 250,000-500,000 pounds of sodium polyacrylate, a new chemical soil conditioner*, next year.

Almost everyone knows Charlie Thomas, one of the world's foremost scientist-businessmen and Monsanto president, and "Ted" Hochwalt, vice president in charge of Monsanto research, development and patent activities. Practically no one, however, knew much about the new product until last week when Monsanto unveiled it—as Krilium—for the chemical world in general, and agricultural research scientists in particular, to evaluate.

Guarded Optimism: Confident that this is one of the most important developments to come out of its laboratories, yet cautious because the inexorable variables of weather and climate often dim the brightest agricultural chemical research prospects, the company in effect said this:

"Here is a synthetic material that improves the mechanical structure of soil. It is not a fertilizer. It keeps soil in good tilth (maintains good soil structure) the way a farmer does when he rotates his crops; plows under soil residues; adds manure, peat moss, compost, etc.

"This 'soil particle cement' should result in greater crop yields, sturdy growth. For Krilium in soil:

- Increases aeration of plant roots, essential in plant assimilation of nutrients.
- Allows more rapid absorption of moisture during a rain, cutting down water losses during run-offs and storing water in the subsoil.
- Boosts the water-holding capacity of soil, making more water available for plant growth.
- Cuts down on loss of water from soil by evaporation.
- Improves workability of soils.

"Applications* that appear likely at this time are in home (or market) gardening, greenhouse soils, badly crusted soils, saline soils, and in erosion control.

"These are the answers research by ourselves and cooperating investigators has given us. We have not yet exploited the material commercially nor promoted its use. We hope our results will spur more agronomists to join us in work on the product to determine its practical utility."

Those agricultural scientists who respond to this invitation—and indications are that they will be many and enthusiastic—are embarking on a project that began as a research chemist's "why" in 1939. The chemist was Thomas; the "why," variations in productivity of different sections of his Dayton, O. farm.

Must Be a Reason: Thomas couldn't understand why some sections of his fields always gave good yields; others, never, no matter how heavily he fertilized them. It wasn't a difference in nutrient content, he concluded from soil analysis.

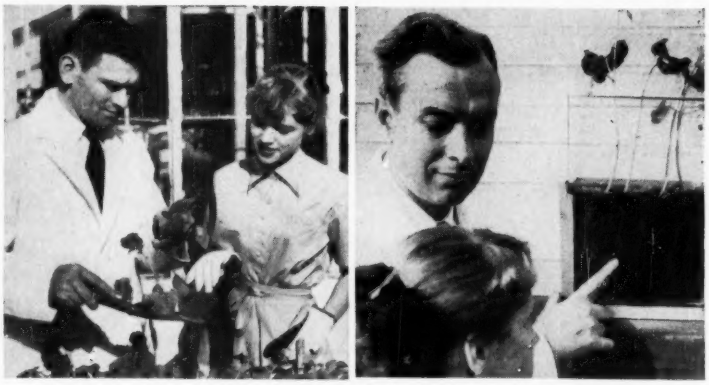
On a walk about the farm with his long-time associate in chemical research, Hochwalt, Thomas pondered possible reasons, finally decided to begin a fundamental investigation into differences between the productive soil and the non-productive land. A few men were assigned the task on an unofficial basis, but the war came, and the problem had to be shelved.

About three years ago, the work was resumed at the Dayton Central Research Labs as an official fundamental research project; but no possible economic significance was then envisioned. It was assigned to an organic chemist, Ross Hedrick ("Mel" to his colleagues), who originally devoted only half-time to the job, so little was thought of its promise. Another organic chemist, Dave Mowry, joined him, and soon they began to find some of the answers.

Nature's Glue: Their program essentially involved finding synthetic substitutes for natural products that hold together the primary elements in soil and determine its structure. Structure is one of the factors con-

* Not to be confused with calcium acrylate, applied as a monomer and then polymerized, to improve load-bearing characteristics of swampy soil for military purposes. Nor with other acrylic polymers developed for other uses such as textile sizing, etc.

* To be covered by a spate of use patents.



HEDRICK AND MOWRY: A half-time job should give the lie to Malthus.

trolling the physical properties of soil; the other is texture. Texture refers to the relative amounts of sand, silt and clay in a soil; structure, the arrangement of primary particles of these elements into relatively stable aggregates.

A soil having stable aggregates ranging in size from that of a pinhead to that of a pea, has "good structure." And the higher the percentage of soil aggregation, the better the soil.

It was known that natural gums of the polyuronide type cement the particles together into aggregates to produce a soil of good structure. Such soil conditioners are minor by-products formed when manures, composts and the like are decomposed by soil microorganisms.

But it takes many tons of manure, etc., to produce one ton of polyuronide, since most of the organic matter becomes carbon dioxide and water, with a small trace forming insoluble humus, the value of which is as yet debatable. In many areas, moreover, these materials are not readily obtainable. And the polyuronides themselves are vulnerable to bacteria; hence use of natural soil conditioners is a never-ending, expensive process, as any farmer knows.

The specifications for the desired chemical were clear: It had to have the same effect as the natural components at much lower concentration; it had to be much more resistant to bacterial decomposition.

Meeting the Specs: By the Edisonian method—trying some hundred-odd compounds—Hedrick, Mowry and their associates found that only certain water-soluble polyelectrolytes did the job at the low concentrations dictated by cost considerations. They narrowed the search down to Krilium, so named because of its phonetic similarity to acrylonitrile, which is polymerized, then hydrolyzed to produce it.

The primary action of Krilium, applied as a powder or as a water solution, is to stabilize soil aggregates against the dispersing or slaking action of water. Any weekend gardener can attest that sufficient use of a hand cultivator will result in loose, porous soil. But only soils of good tilth retain that desirable condition under downpourings of rain which disperse and slake the clay fraction in the soil.

Poor tilth soils dry out to a hard crust and crack, reducing germination, and permitting water to evaporate rapidly. Small amounts of Krilium properly incorporated increase the percent of water-stable aggregates —often doubling or tripling them—to give a soil of good tilth.

Secondary benefits arising from this enhanced soil structure include improved aeration, better moisture relationships, easier tilling and improved yields. At this stage, Monsanto is convinced that appreciable increases in yields of roots crops like carrots and radishes can be achieved, but sufficient data to draw specific conclusions are not yet in.

One effect can hardly be considered a benefit: Growth of weeds is promoted. This, however, Monsanto must view with mixed emotions, for the company has a big stake in weed killers, too.

Tests conducted to date indicate that Krilium has no toxic effects on soil microorganisms, and it doesn't appear to be picked up by plants either. The latter point is being checked with material containing radio-active carbon. Also, it apparently resists breakdown in soil; at least, none has been evident in tests extending over two years and ten months.

Custom Made: One of the most ob-

vious outlets is greenhouses, which being high-cost operations, must have optimum soil. Typical greenhouse soil contains 20% peat moss, 20% manure, 10% sand, 10% vermiculite, and 40% original soil; and mixing that is an expensive–and smelly–business. Monsanto feels that 0.02-0.1% of Krilium, plus inorganic fertilizers, will produce as good results as such complicated mixtures; has preliminary reports on rose culture at Ohio State as a basis for this.

Areas where slaking and crusting prevent emergence of some crops are other likely markets. Many soils of the West, left with alkaline or saline residues from many years' evaporation of irrigation water, possibly can be rejuvenated with Krilium. For if the soil is rendered more friable, water can enter and leach out the salts. Monsanto also has hopes for the product in Government reclamation projects in Oregon and Washington, and in other sections of this country that have severe soil drainage problems, as well as in Holland, where the land must be recovered from the sea.

Encouraging results are already coming in its use in erosion control. Dusted on the surface, the conditioner forms a surface film to stabilize the soil against rainfall and run-off water, helps grass seed germinate to establish a cover. Test racks show that 40 lbs. per acre of Krilium equals two tons per acre of straw. It's pretty expensive, as are all erosion controls, but the company has possible variants which may permit cutting down appreciably on amounts needed. Moreover, straw is unavailable or very expensive in some areas; also such mulches occasionally present fire hazards. The latter is particularly important around munitions depots.

State highway commissions present one tremendous piece of erosion control business that Monsanto is eyeing, for if the company sells one state, it will be well on the road to convincing all. Grass seed is one of their high-cost items–60-75¢/lb.–so anything that will promote germination, keep highway banks intact, is of interest to them. Connecticut is already trying it, spraying a mixture of seed, fertilizer, water and Krilium with a special jet spray nozzle designed for the purpose.

No Rain Checks: Of non-agricultural uses, conditioning footpaths, playgrounds, tennis courts, etc., to give a smooth surface that would be less dusty and muddy seems promising. Only last summer, Hudson Field, home of the Dayton Indians, was treated with Krilium. The fans approved, for the ground dried out faster and cancellations for "wet grounds" were fewer. The players liked it too, said the ball had a truer bounce.

Although the big interest is in soil, there are potential industrial applications for Krilium, too. In sewage beds, it may increase the rate of filtration, or perhaps act as a flocculant. It has promise in the paper industry, to permit upping the percentage of clay which may be incorporated at the beater. Little work has been done on this yet, but it could be significant in times of cellulose scarcity, such as now.

The quantity of Krilium to be made in 1952 will be distributed primarily for experimental purposes, though a limited test marketing may be carried out toward the end of the year. Currently the product is being turned out in a pilot plant in Springfield, Mass., maximum output of which in any one month has been 20,000 lbs.

No decision on location of a full-scale plant has yet been made, nor has Monsanto revealed any proposed site. But by the end of '52, the company's acrylonitrile plant at Texas City will be in, and there will be enough raw material available to make 20-30 million pounds of Krilium if the market justifies.

The initial price, "under $2 a lb.," sounds high for a material to be worked into the earth. But Monsanto points out that one lb. of Krilium is equal, in effect on soil structure, to 200 lbs. of peat moss or 500 lbs. of commercial compost. These established materials sell for about 4¢ and 2½¢ a lb., respectively. It also reiterates that Krilium is more resistant to the bacterial decompostion; hence has an inherent economic advantage here.

Old Refrain: And Charlie Thomas, whose curiousity got the whole Monsanto team working on the project, remembers another chemical development he shared in, which was once ridiculed as "economically unsound": tetraethyl lead. In 1923, priced at about $5 a lb., it was launched as an additive for 6-7¢ gasoline. He feels the same way about Krilium as he did about TEL.

Monsanto admits it doesn't have all the answers yet. But it feels this "may be a partial answer to the pressing problem of getting the earth to produce man's food."

If Malthusians with their dire prediction that the world's population will outstrip the ability of the land to support it, aren't confounded–they should be.

THE PERKIN-ELMER

INSTRUMENT DIGEST

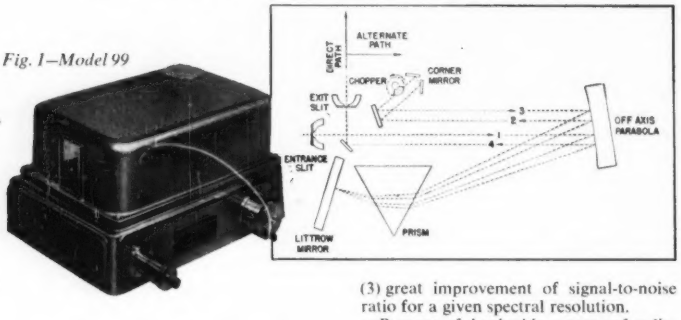
A condensation of some of the articles appearing in the Fall issue of THE PERKIN-ELMER *INSTRUMENT NEWS*, a quarterly publication of The Perkin-Elmer Corporation, manufacturers of scientific instruments—Infrared Spectrometers, Tiselius Electrophoresis Apparatus, Universal Monochromator, Flame Photometers, Continuous Infrared Analyzer, Low-Level Amplifiers—as well as Astronomical Equipment, Replica Gratings, Thermocouples, Photographic Lenses, Crystal Optics, and Special Instruments for the Government. **For further information, write The Perkin-Elmer Corp., Norwalk, Conn.**

Norwalk, Conn. | January, 1952 | Vol. 3, No. 2

New Optical Principle Improves Instruments' Performance

Model 99 Monochromator and Model 112 Infrared Spectrometer Have Double Pass Feature

Fig. 1—Model 99



A new optical "double pass" principle involving the passage of radiation four times through the prism of a Littrow-type monochromator instead of twice, results in double monochromator performance with single monochromator cost and simplicity.

New Instruments—This principle has been applied with great advantage to two new Perkin-Elmer instruments. In the new Model 99 Double Pass Monochromator, monochromatic radiation of high spectral purity is achieved by maximum utilization of existing optical components with minimum mechanical complication. The Model 99 Monochromator has also been incorporated with the source unit and recording system of the Perkin-Elmer Model 12-C Infrared Spectrometer to form the Model 112 Infrared Spectrometer. The advantages of the double pass feature here are:
(1) virtual absence of scattered radiation;
(2) twice the spectral resolution than could be achieved with a single optical system of the same dimensions;
(3) great improvement of signal-to-noise ratio for a given spectral resolution.

Because of the double passage of radiation in the new monochromator, dispersion is doubled, and scattered radiation is reduced to a negligible amount throughout the ultraviolet, visible and infrared range. Energy per spectral slit width is doubled, times the efficiency factor of the instrument (.75 for infrared).

The Model 99 is essentially the Perkin-Elmer Model 83 Universal Monochromator plus the double pass feature.

Optical Path—Light entering the entrance slits is collimated by the off-axis paraboloid on the prism (Fig. 1). After one refraction the beam is reflected by the Littrow mirror for a second refraction by the prism. The returning beam is brought to a focus by the paraboloid between the two halves of the corner mirror. The corner mirror sends the beam back through the system slightly displaced so that after a second traversal through the paraboloid, prism and Littrow portion, the beam is brought to a focus on the exit slit. A radiation chopper is inserted after the corner mirror so that signals produced in the detector by first and second pass radiation may be separated.

Performance data of the Model 99:

Resolution:
Better than 0.5 A at 2500 A (quartz prism)
Better than 1 A at 5000 A (glass prism)
Better than 2 cm^{-1} at 1000 cm^{-1} (NaCl prism)

Scattered Radiation:
Less than 0.1% throughout the range

Range:
From 2000 A to 40 microns (with suitable prisms)

New Infrared Spectrometer—The advantages of the double pass monochromator for infrared spectroscopy are of considerable importance. For qualitative work the improved resolution means greater discriminatory powers for the spectrometer (Fig. 2). Thus more nearly similar materials may be better detected by infrared methods, or structural analyses may be carried further.

For quantitative measurements, improved resolution is also valuable. From a consideration of Beer's Law, the more nearly monochromatic the spectral band used for measurement, the more closely will a plot of absorbance vs. concentration approach a straight line. Of more importance for accurate concentration determination, is the practically complete absence of false radiation.

All of the other features of the Perkin-Elmer Model 12-C Infrared Spectrometer are retained in the Model 112. Accessories for Models 12-C and 21 may be used with Model 112.

The double pass feature may be added to any Perkin-Elmer Model 83 Monochromator or Model 12 Spectrometer.

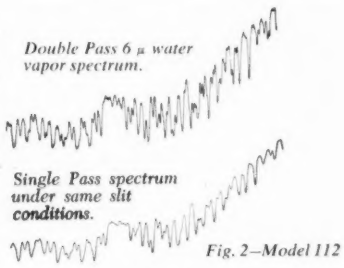
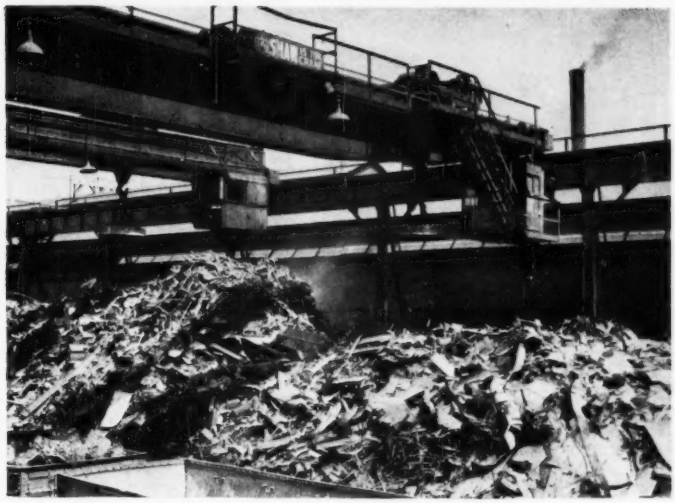


Fig. 2—Model 112



SCRAP FOR MILLS: From a little extra effort, a lot can be uncovered.

Patriotic and Profitable

The Government is pushing the drive for more scrap. Industry cooperates, makes money at the same time.

CW queries chemical companies to find out what they are doing to cooperate in drive.

Survey shows they are doing a better-than-average job, but there is still room for improvement.

Everyone likes to be patriotic and everyone likes to make money. Your job is a cinch if you can convince people that they can do both at the same time.

That's how the Government is selling Defense Bonds and that's why industry is cooperating in the scrap drive. In the case of the scrap drive, however, the Government doesn't have to stress the money angle since, for the most part, it is dealing with firms whose stock-in-trade is spotting a dollar sign from a distance.

So the Government is urging industry to dig out its scrap to keep steel mills operating at top speed* and the defense effort moving in high gear. And individual companies are busy hunting for scrap because (1) they want to cooperate and they want more steel; (2) they can get premium rates for their scrap right now; (3) good housekeeping—even in normal times—demands a minimum of dormant scrap.

An Extra Push: This week, in order to find out how the chemical industry is cooperating with (and making money from) the drive for more scrap, CHEMICAL WEEK queried representative chemical firms from coast to coast. Responses showed that although methods varied slightly, all were making an effort to get the scrap out.

All the companies prided themselves on their ability to keep a good house, and some were satisfied that any additional efforts would be fruitless. Others reported that they had intensified their scrap drives since NPA started plumping for more scrap last spring. Almost all of those in that category said they were surprised with what they had been able to uncover. A few of them:

• Du Pont says it has had a Scrap and Salvage Division in active operation since 1907, but redoubled its efforts in May last year. Final figures for 1951 are not in yet, but the company is convinced that scrap salvage will hit an all-time high. It admits that in the long run it won't get any scrap to the steel mills that wouldn't get there anyway, but it will get there sooner.

Indicative of the success of Du Pont's program are the figures compiled for the first six months of its intensified efforts (May 1–Oct. 31): 31 million lbs. of dormant iron and steel scrap, 39 million lbs. of iron-bearing sludge, over 4 million lbs. of non-ferrous metal scrap. It also turned up 37,000 pieces of usable equipment which were transferred to other plants or sold outside, "hundreds of tons" of chemicals, greases, lumber, electrical and mill supplies, as well as assorted goggles, workers' tools and containers. From its ferrous scrap, Du Pont estimates that 2,900 tanks can be built.

• Diamond Alkali also surprised itself. At its Painesville (Ohio) plant, it managed to produce a normal year's supply of scrap in six months. In one four-week interval, it loaded and shipped an even dozen railroad gondola cars.

• S. C. Johnson and Son says it has had a policy of accumulating scrap and selling it every month. Until a recent drive, it turned up 48,000 lbs.; in two days of extra searching it came up with 20,000 lbs. more.

• Pennsalt's comment: It regularly turns in 120 to 125 tons a month, has been able to dig up 250 tons in addition to the regular contribution.

• Reichhold reports that it has been able to completely wipe out its stockpile of old machinery and equipment. Result: 250 tons of scrap.

Struck It Rich: Monsanto had a stroke of luck in rehabilitating the plant it purchased from the United States Pipe and Foundry Co. in Addyston, Ohio *(CIW, Apr. 7, '51)*. It found the previous owner had used metal pipe as a fill and Monsanto uncovered many tons which are being channelled to steel mills.

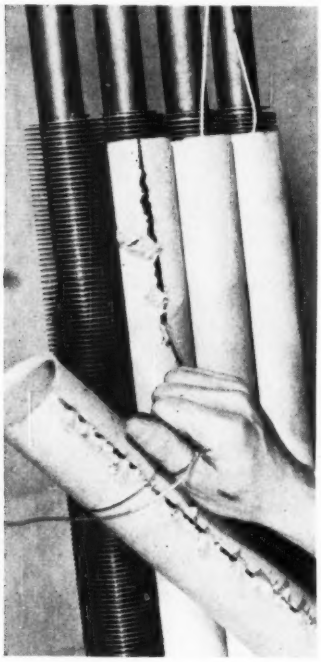
• Standard Oil of Ohio had a similar experience on a new construction job in Cleveland. It is building a structure on a site that had been occupied previously, is uncovering a surprising amount of long-forgotten materials.

Some companies, like Union Carbide and Carbon's Linde Air Products Co., have an extra stake in a a scrap drive. Linde produces oxygen and acetylene used in large quantities in torches for making little pieces of scrap out of big ones. It is always eager on the subject of scrap; and while no figures are available, it's a safe bet that Linde's prodding alone is enough to keep dormant scrap rolling out of the corporation's plants.

* Greatest production efficiency for open hearth furnaces results from a charge of roughly 1:1 pig iron and steel scrap. Steel scrap has already been refined, its use cuts time required for new steel production. As a result, when one ton of scrap can be substituted for one ton of pig iron, four tons of raw materials are saved.

Room For Improvement: In general, CW's survey revealed that the chemical industry is doing a better-than-average job in collecting scrap. Companies that posted good records did it by forming special committees, but in the final analysis it's the plant manager and the production man who get the scrap out.

The survey also pointed up the need for more intensive efforts by some of the companies. If you're a plant manager—and a good one—you'll turn in your slide-rule before you admit that you don't keep a good house. But if you're an average American, you like to hoard and save. And unless you have made that extra effort, experience of others and expert advice says that there is still a lot of scrap lying around in your plant.



Pull to Open

SHIPMENTS of pipe fin heaters were costing Proctor and Schwartz about ten cents a foot because of the need for wooden crates with separators. Deciding that something should be done about it, A. O. Hurxthal, v.p. in charge of development, saw some mailing tubes, had some made to fit the pipes. He found they could be bounced or stepped on without crushing and that shipping costs were reduced to two cents a foot. Other advantages: Method can be adapted to bent sections, a string makes unpacking a cinch. P & S has received a patent on the idea, is now licensing it.

RUBBER DRUMS: Stackable, manageable . . .

One Round for Rubber Drums

General Tire's rubber drums are catching on with chemical companies as a replacement for glass carboys. Big advantages (over glass carboys): They are tough, can mean savings in shipping and storing, are easily handled. But glass carboys have certain advantages, too; and more important, have established themselves as standard shipping containers for a host of corrosive chemicals.

The rubber drums have just been okayed—by the manufacturer—for shipment of five alkyl acid phosphates and 70% phosphoric acid. Latest company to express a preference for them is Dearborn Chemical Co. Tests made during the summer have now resulted in a decision to standardize on the rubber drums for shipments of a boiler descaling compound.

Unbreakable: Made by General Tire and Rubber Co., the natural rubber, neoprene and all-butyl drums, with three different types of closures, are distributed by The C. P. Hall Co. Hall itself uses approximately 4,000 to ship its own chemicals, fills about 15,000 for other companies.

Customers report they like the drums for several reasons, not the least of which is their unbreakable feature. That could mean sizable saving in maintenance costs. One company, for instance, figures maintenance cost average $2 a year for a glass carboy, another charges off 50¢ for each filling.

To show the contrast, Hall officials proudly point to drum #40, one of the first drums the company bought in 1937. In constant service since then, it doesn't have a crack or a split; and Hall claims the only maintenance expense has been an occasional replacement of a 2¢ gasket or lost bung plug.

Light Weight: The drums are compact and less than half as heavy as their glass counterparts. They can be easily lifted by one man and readily rolled into place. Lighter weight adds up to lower freight weight, particularly on return of empties.

Furthermore, the rubber drums are shipped under a less costly classification. Glass carboys (70 lb.) ship under ICC Class #1 at $1.11 cwt. under 5,000 lb.; $0.90 cwt. over 5,000 lb. Rubber drums (34 lb.) ship under ICC Class 33 at $0.84 cwt. under 5,000 lb.; $0.64 cwt. over 5,000 lb.

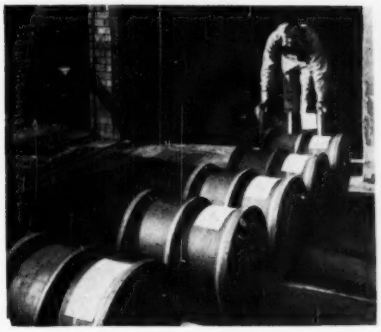
Less space is required for stacking the smaller drums too. Boxed glass carboys occupy 4 sq. ft. of floor space, stand 30 in. high; the drums take up 1¼ sq. ft., are 20½ in. high. The rubber drums can be stacked in parallel rows, while the glass carboys must be staggered because of their protruding necks. That adds up to more savings on freight, also on warehouse storage space.

Potshots: But in spite of the several advantages of rubber drums, glass carboys are a long way from being counted out. As one manufacturer put it: "We've been making carboys for a long time and periodically someone will take a potshot at us by saying he has a new container—metal, plastic or rubber—that will do a better job. Initial costs of the carboys are cheaper than almost all of them and we can beat every one on some features. Glass carboys are still the standard for comparison."

And although rubber drums are unquestionably tough, glass carboys aren't exactly fragile: Some of them have been in continuous use for 35 years. When a glass carboy breaks there is never any trouble detecting it, but other containers are apt to spring a leak that can't be detected. In some cases a slow leak could be an advantage, but in many cases it could be a drawback.

Carboy makers are also quick to point out that their containers can be

PRODUCTION . . . .



. . . . rollable.

cleaned out by simply rinsing with warm water. Most important is the fact that glass carboys have an established market and have proved their ability to perform over long periods of time. Best guess at this point is that there is room for both, and that although rubber drums are making inroads in shipping, they are not likely to put producers of carboys out of business.

Score Card: To date, the natural rubber drums have been approved for hydrochloric, sulfurous and phosphoric acids; solutions of zinc, ferric, aluminum and ammonium chloride; sodium hypochlorite, sodium cyanide and ammonium sulfate.

The neoprene drum is approved for hydrofluoric and fluosilicic acid. Butyl drums are approved for hydrofluoric acid (up to 60%), glycerine, hydrobromic acid, ethylene gylcol, 70% phosphorous acid; ethyl, N-octyl, isopropyl, N-propyl and N-butyl acid phosphates.

Tests are underway for 45% fluoboric acid, ammonium hydroxide, glacial acetic acid, ethyl iodide, benzoic acid solution and ammonium thiosulfate.

EQUIPMENT. . . .

Dust Collector: A new cloth-bag collector is being marketed by the Pangborn Corp. Suitable for collecting dusts like carbon black, graphite, pigments and metal oxides, the collector is said to permit dust control with a low investment for equipment and installation.

•

Teflon Joint: Latest manufacturer to adopt a bellows-type expansion joint made of Teflon fluoroplastic is the Crane Packing Co. It connects misaligned couplings and electrically insulates flanges; and is said to serve as a vibration dampener as well as an expansion joint. The fluoroplastic joint is intended for applications involving corrosive gases or liquids.

BOOKS . . . . . .

Hydrogenation of Fatty Oils, by H. I. Waterman, with the collaboration of C. Boelhouwer and L. J. Revallier. Elsevier Publishing Co., New York, N.Y.; ix+254 pp., $6.50.

A review of the fat-hardening industry taking into consideration recent developments in the field. Two main sections deal with the raw materials—animal and vegetable oils and waxes—and the subject of hydrogenation with regard to the actual technical processes involved, and the conditions such as temperatures and pressures at which it is best to work. These two divisions embrace the topics of raw material sources, methods used in obtaining and refining the oils and analytical methods, as applied to the classification of natural oils.

Ultraviolet Spectra of Aromatic Compounds, by Robert A. Friedel, and Milton Orchin. John Wiley & Sons, Inc., New York, N. Y.; 708 pp., $10.

Introductory text explains purpose and scope of spectra collection, instruments used, experimental procedures, theory, and the application of ultraviolet spectra to the qualitative and quantitative analysis of chemical compounds. The approximately 600 ultraviolet spectra given are concerned primarily with polynuclear hydrocarbons, but also treat heterocyclic compounds and polynuclear compounds with functional groups.

A Dictionary of Antibiosis, by Leonard Karel and Elizabeth S. Roach. Columbia University Press, New York, N.Y.; xi+373 pp., $8.50.

A dictionary for medical and biological workers concerned with antibiosis, lists antibiotic substances with reference to source of substance, its extraction, chemical and physical properties, spectrum, structural formulas (not always), and toxological, pharmalogical, and clinical results. The scope of the volume allows for a noting of plants of both higher and lower forms, which have proved to be a source of antibiotic substances and microscopic forms which have been used as test organisms.

The Theory of Isotope Separation, by Karl Cohen. McGraw-Hill Book Co., Inc., New York, N.Y.; xviii +165 pp., $2.

One of the National Nuclear Energy Series, this volume is devoted to the reports issued by the theoretical division of the SAM Laboratories and its antecedents in reference to the theory of isotope separation as applied to the large-scale production of U^{235}. Covering the work done in the years from 1940-1945, the book stresses general principles and concepts rather than particular data on results. Appendixes contain subject matter amplifications that are of more practical interest.

Briefly Listed

REFERENCE BOOK OF INORGANIC CHEMISTRY, third edition, by Wendell Latimer and Joel H. Hildebrand, 625-page volume retains objective of presenting basic facts and data concerning inorganic chemistry in one book, but gives increased emphasis to thermodynamical data, such as oxidation potentials, equilibrium constants and free energies. The Macmillan Co., 60 Fifth Ave., New York, N.Y.; $5.

TEN THOUSAND COMMANDMENTS, by Harold Fleming, report on antitrust laws and the series of decisions made by the U.S. Supreme Court in recent years which have altered the interpretation of these laws. The author gives his opinion of the condition of American business as affected by the present interpretation of anti-trust laws. Prentice-Hall, Inc., 70 Fifth Ave., New York, N.Y.; hard cover $3, paper cover $2.25.

A STUDY OF ANTIMETABOLITES, by D. W. Woolley, 269-page monograph concerned with the essential facts on substances which specifically produce deficiency diseases in living organisms—antimetabolites. The author reviews the history of antimetabolites from their discovery to their potential and actual applications to pharmacology, chemotherapy and biochemistry. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N.Y.; $5.

MEETINGS . .

Natl. Constructors Assn., annual meeting, Waldorf-Astoria Hotel, New York, Jan. 8-10.

Synthetic Organic Chemical Manufacturers Assn., Commodore Hotel, New York, Jan. 9.

Manufacturing Chemists' Assn., interindustry conf. on chemicals in foods, Statler Hotel, New York, Jan. 15.

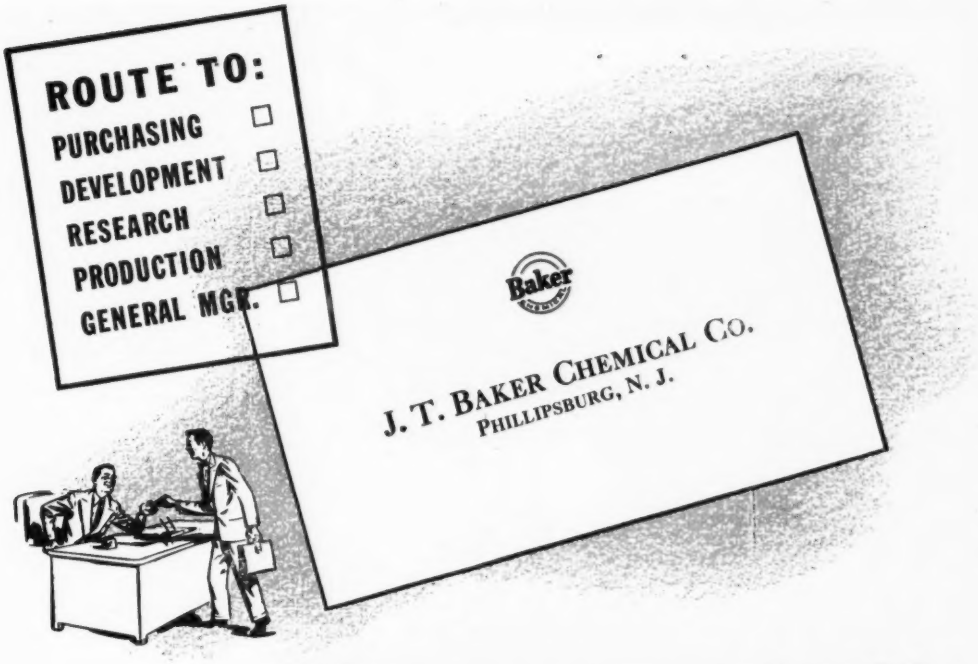
Soc. of Plastics Engrs., national technical conf., Edgewater Beach Hotel, Chicago, Jan. 16-18.

Drug, Chemical & Allied Trades section of New York Board of Trade, mid-winter luncheon meeing, Astor Hotel, New York, Jan. 17.

Compressed Gas Assn. Inc., annual meeting, Waldorf-Astoria Hotel, New York, Jan. 21-22.

Assn. of Amer. Soap & Glycerine Producers, annual conv., Waldorf-Astoria Hotel, New York, Jan. 22-23.

Manufacturing Chemists' Assn., air pollution abatement conf., Statler Hotel, New York, Feb. 25-26.



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Any morning, a purchasing agent may be confronted with some new, unexpected request . . .

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We'd be glad to help you—if you have problems involving tonnage chemicals of high purity. Simply write to J. T. Baker Chemical Co., *Executive Offices and Plant*, Phillipsburg, New Jersey.

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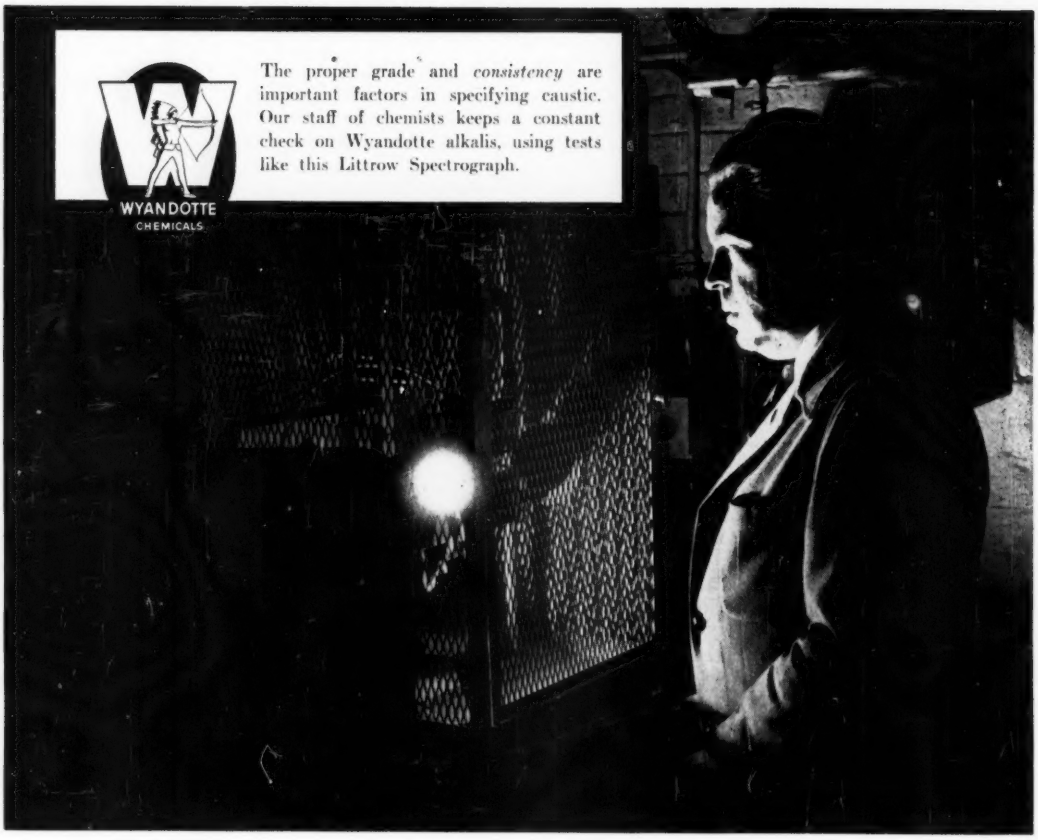

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Among the many grades of Wyandotte Caustic Soda, you'll find the grades best suited to your needs . . . for soaps and detergents; food processing; paint, inks, and dyes; for insecticides, textiles, and lubricants.

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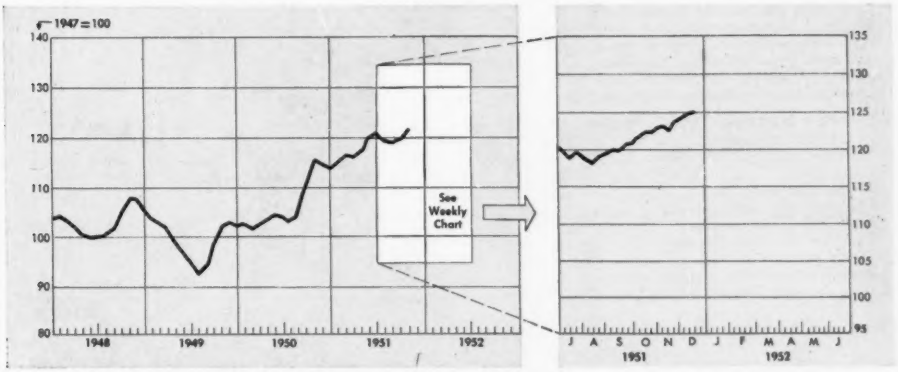
Our experienced staff of chemists is at your service for technical help. As a service to you, they have collected into a handy booklet the analysis procedure (mentioned above) for caustic, soda ash, and bicarb. A copy is yours for the asking. Why not write for it? — or for product data or technical help? *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in Principal Cities.*

Wyandotte
CHEMICALS



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

Those chemical manufacturers who have only lately elected to file under CPR-22—and there have been quite a few—can't take immediate advantage of the higher price ceilings. No changes can be made price-wise until the registered application letter is processed, and then a 30 day period must elapse before the manufacturer can sell at the new prices.

A long delay in mixed fertilizer pricing is in prospect, as OPS had a producer price option backfire this week. The Mixed Fertilizer Advisory Committee, in its third get-together with OPS, urged that a tailored regulation for the industry be forgotten for now. Reason: Some of the season's shipments are already enroute to the distribution centers.

The mixers still have the earlier choice of staying with GCPR or CPR-22. Back in August, the Fertilizer IAC wanted a tailored regulation because of the likelihood of increases in materials and freight beyond the CPR-22 cut-off time. Until this is settled, prices can't be raised, but relief may be forthcoming on an individual basis.

A robust expansion in nitrogen capacity is under way: More is now being plumped for by the industry, and the Department of Agriculture says it won't be enough. To meet estimated requirements as far ahead as 1955, the advisory committee recommended to NPA that 220 thousand tons of extra nitrogen capacity be developed by that time, in addition to the 620.8 thousand tons slated from 16 new or expanding plants.

The USDA believes this should be stepped up even faster, and will engage in a state-by-state survey to prove it. But an industry spokesman points out that before making investments as huge as the USDA advocates, he would like to "make darn sure that the market will be ready before he is".

More nitrogen as nitric acid will be made available now. The Department of Defense has consented to lease three ordnance works in Oklahoma, Ohio, and Pennsylvania, each with a daily acid capacity of 50 tons. Two other plants, one in Missouri and one in West Virginia, have practically all the equipment for an additional daily total of 50 tons, but the assemblies must be moved from present sites.

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL INDUSTRIES Output Index (1947=100)	124.9	125.0	114.8
Bituminous coal production (daily average, 1000 tons)	1,860.0	1,892.0	1,838.0
Steel ingot production (thousand tons)	2,015.0	2,027.0	1,963.0
Wholesale prices—chemicals and allied products (1926=100)	138.5	138.2	139.8
Stock price index of 14 chemical companies (Standard & Poor's Corp.)	240.4	244.4	209.9
Chemical process industries construction awards (Eng. News-Record)	$23,882,000	$3,518,000	$2,345,000

MONTHLY BUSINESS INDICATORS—TRADE (Million Dollars)	MANUFACTURERS' SALES			MANFACTURERS' INVENTORIES		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All Manufacturing	$22,370	$20,700	$20,684	$41,299	$41,098	$30,947
Chemicals and allied products	1,562	1,521	1,448	3,012	2,970	2,197
Paper and allied products	691	663	632	939	936	669
Petroleum and coal products	2,112	2,000	1,836	2,610	2,574	2,203
Textile products	1,106	1,086	1,151	3,071	3,130	2,327
Leather and products	262	257	308	606	637	525

The boost in nitrogen capacity, and similar growth in chlorine and elemental phosphorus, will help to solve other shortages. Most notable: sulfur. In many cases, sulfur-containing or sulfur-using products can be at least partly supplanted by the growing supplies of these other three elements and their compounds.

For instance, chlorinated insecticides conserve on sulfur dust; and the larger amounts of byproduct hydrogen chloride produced in organic chlorination lessen demand for sulfuric acid, which is used to make HCl by the Mannheim process.

Nitric acid shows promise of extending sulfuric needed for superphosphate, and more phosphoric acid from elemental phosphorus is another route to the same point.

These trends only highlight the moral: Don't underestimate the ingenuity of the chemical industry.

The Defense Production Administration this week listed the top ten kinds of facilities it will help to expand. Of those in this select group, four are closely allied to the chemical industry: No. 2, ores of copper, lead, and zinc; No. 4, sulfur; No. 7, nitrogen; and No. 8, aviation gasoline.

Position on this list, however, doesn't always reflect DPA's ideas on fast tax write-offs. Two other factors carry weight: 1) non-defense uses for the plant; 2) degree of financial help needed.

Scarcity of most metals will be remedied during 1952. Partly it is a matter of expanding capacity and encouraging high-cost producers by subsidy. But in the case of lead, copper, and antimony, the prospect of greater imports, now that world demand is quiet, is at least equally important.

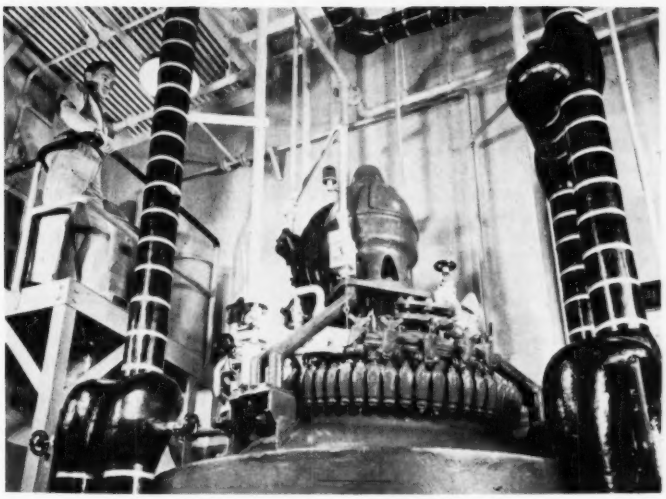
When prices on the world market were high, and OPS kept domestic ceilings low, imports fell off sharply. But now, foreign producers are once again eyeing the U.S. market.

Almost every chemical manufacturer will benefit by the more liberal steel drum inventory permitted under the amended NPA order M-75. The 45-day inventory rule has now been extended to cover all types of drums he normally uses. The result: fewer nettlesome delays caused by lack of containers.

SELECTED CHEMICAL MARKET CHANGES—Week Ending December 28, 1951

		Change	New Price			Change	New Price
UP	Carnauba Wax, No. 1 yel.	$ .01	$1.23	Lead Arsenate, frt. all'd.		$ .0125	$ .30
DOWN	Cresylic Acid, imp., gal.	.03	1.35	Quicksilver, 76 lb. flask		1.00	210.00
	Manganese Naphthanate, 6%	.005	.25				

All prices per lb. unless quantity is stated



SYNTHETIC VITAMIN A: The fish aren't complaining.

Vitamins Revitalized

Vitamins have just concluded a banner year, with new and improved processes and widening uses bringing lower prices.

Most recent development is the price reduction in synthetic vitamin A from 18¢ to 15¢ a million units, as supplies of natural A shrink.

Biggest changes in 1951 occurred in the B complex family, included a new process for niacin and niacinamide, and a surge in vitamin B_{12}.

Vitamin sales seem to be exhibiting the kind of growth that vitamins themselves induce. In the last few years, vitamins have been more or less overshadowed by the meteoric rise of antibiotics and antihistamines. But 1951 has been a year in which vitamins have made the strides that can't be kept out of headlines.

For this twelve-month period has been marked by expansion, development of new uses in feed supplements, gains in synthetic over natural products, and a general trend to lower prices.

A Tide Turns: Latest note in the economic fray between the natural vitamin A and the synthetic was sounded this month. All four of the major synthetic producers reduced the price from 18¢ to 15¢ a million units. This continues a trend dating back to the synthesis of vitamin A by Hoffmann-LaRoche some twenty months ago. The latest price cut was initiated almost simultaneously by Hoffmann and Chas. Pfizer, and soon followed by Merck and Distillation Products Industries.

This reduction will doubtless speed the departure of most of the fish liver-derived product. But producers of the natural are not ready to abandon ship so easily. Many think that the raw materials for this, now obtained mostly through the Japanese fleets, can and will come down in price if need be. It is now evident, however, that the supply of natural vitamin A will not be sufficient to take care of demand, so the trend toward synthetic seems to be inevitable.

To some extent, as in multivitamin preparations, the competition is still keen, with the synthetic having gained the edge during the past year. Next immediate target for synthetic: FDA approval for use in oleomargarine.

It is likely that the market will take the combined output of both types for some time to come. For latest nutrition research seems to point to a minimum adult daily requirement of 10 thousand units rather than the currently recommended minimum intake of 5 thousand. Uses of vitamin A in animal feeds is still a small factor, but growing steadily in some applications like keeping turkeys healthy. And vitamin A producers are not overlooking promise in export markets.

More Complex: Newsworthy as the A vitamin has been, the biggest changes over the past year have come in the family of B vitamins. Both niacin and niacinamide, previously manufactured from pyridine, can now be made by a new process using acetaldehyde and ammonia. Nepera Chemical is now using the process to make the amide, and Merck will shortly be making niacin.

This new synthesis was especially welcome since pyridine has been critically short. With the added output, supply and demand for these two vitamins should be in balance in the second quarter of 1952. Which process gets the economic nod eventually will depend primarily on the selling price of pyridine. With pyridine at today's level—around $1 a pound—the new method is beyond doubt competitive.

For rapid commercial gains, the most promising prospect is conceded to be the B_{12} vitamin. This has attained a brisk over-the-counter sale in multivitamin supplements for human nutrition. Even surpassing this rate of growth is its use, under the name APF, in feed additives for livestock. Enthusiasm for this material is undiminished, and though it's a bit early to gage future growth, current output is expected to rise several fold to meet demand.

Surprisingly, this fermentation product is less than two years old. Originally it was a byproduct in streptomycin manufacture, but it is now the primary product of a different fermentation process. This is all to the good for supplies, because in the fast-changing antibiotics business, hitching a sales wagon to one product is somewhat risky. During 1951, the price of B_{12} has dropped from $595 to $350 a gram. Further improvements in technology and widening uses point to still lower prices later.

Not the End: Other vitamin accomplishments underscore the progress made in 1951. For instance, by next spring production of inositol, a B vitamin derived from corn, will have more than doubled in a year. And ascorbic acid (vitamin C) is now finding new outlets in the packaging of frozen fruit to prevent discoloration. Currently improving supplies of plastic film will enhance the growth of the C vitamin in this market.

Changes like these have made the past year a prosperous one for vitamin producers, and the year ahead looks equally roseate. Consumers will reap benefits too—in the form of lower prices.

From Discs to Floors

Faces of shellac importers and processors this week wore slight smiles which might well broaden. It looked like the boomlet in high-shellac floor polishes could be turning into a real boom.

At present, most companies are still in the testing stage, but increases in shellac purchases by some polish makers show they are about ready to introduce new formulations. Such polishes would capitalize on the success of Beacon's Quik-Gloss product and Johnson's Hard Gloss Glo-Coat *(CW, Oct. 27, '51).*

For the shellac industry, this is a new sales area—and a welcome one—since the primary market for the product not too many years ago— phonograph records—has almost dried up. Vinyl plastic discs have by now very largely replaced shellac-based records.

Shellac refiners—as contrasted with those who import the material solely for resale—haven't felt too badly about this loss of business. Record companies usually bought quantities of raw shellac sporadically, competing for the limited supply, and thus forcing prices up. This gave shellac processors the headache of trying to keep their selling prices steady when raw material costs went up. If demand for shellac by record producers were a market factor now, prices could easily be double the present market quotations of 48-49¢ a pound, TN grade.

Sensitive Still: Though records now are a minor outlet, the shellac market remains sensitive; Calcutta exporters customarily boost prices with every strengthening of demand.

Shellac, in terms of total consumption, has just about held its own during past years despite a sharp increase in synthetic resin usage. Shellac continues to have—and probably always will have—a share of the market in wood finishes, but the cost-conscious furniture industry has been looking to materials which have lower and more predictable prices.

Market quotations over the past dozen years illustrate the point: The 1939 price (TN) was 19¢ per pound. By 1942, war buying pushed this up to 34¢. When shellac-for-records demand peaked in late 1947, the price had risen to the 68¢ level. However, it dropped in 1949 to 45¢ and was down to 39¢ in pre-Korea 1950. Since then, the prospect for scarcity of this imported material raised quotations to their present 48¢ range.

Importers expected world prices to drop in autumn, 1951, while U.S. purchasers were working off their inventory. However, enormous purchases by the Russians* kept the overall price constant.

What You'll Pay: Most buyers of shellac have been out of the market to cut down year-end inventories. Importers, however, believe that the normal upswing is on its way, and will reach its peak in late February and March. During that period, paint and varnish suppliers will be getting ready for the usual surge in home building and repair.

While shellac supplies probably will be adequate, it's a safe bet that prices won't be going down. It's unlikely that prices will increase significantly in the immediate future, though two factors may affect the longer range picture: (1) In the case of war, supplies of shellac will be pre-empted for use as an artillery shell coating. (2) Use of high-shellac formulae will be extended from floor to furniture, car and other polishes.

* U.S.S.R. swapped wheat, badly needed by India, for the shellac.

GOVERNMENT NEEDS

Bid Closing	Invitation No.	Quantity	Item
New York Quartermaster Procurement Agency, 111 East 16th St., New York, N.Y.:			
Jan. 8	52-748-B	9,254,000 bots	Water purification tablets (iodine)
"	"	33,400 boxes	Water purification powder (chlorine)
Jan. 16	52-742-B	6,500 bots	Type cleaner
Jan. 9	52-756-B	534,140 lbs	Chlorinated lime, 20-lb export cans
"	"	388,884 lbs	Naphthalene, technical, flake
General Services Administration, Region 2, 250 Hudson St., New York, N.Y.:			
Jan. 7	NY-2B-34911	5,000 lbs	Soap, liquid
Jan. 11	NY-2B-34912	1,000 gals	Enamel paint
New York Chemical Procurement District, 111 East 16th St., New York, N.Y.:			
Jan. (open)	CML-30-070-52-329-B	24,205 gals	Cresylic acid, commercial
Commandant of the Marine Corps, Washington 25, D.C. (Attn: Supply Dept.):			
Jan. 9	558-B	15,600 lbs	Hand soap, grit paste for mechanics use
"	"	500,000 lbs	Paste soap for general cleaning, type II
Navy Purchasing Office, 111 East 16th St., New York, N.Y.:			
Jan. 17	9997-B	500,000 lbs	Dishwashing compound

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P 2859 Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

Position Wanted

Chemical Engineer. Eight years experience foods, chemicals, petroleum refining. Research, development, pilot plant operation. Sales promotion, import-export. Major European languages. From initial idea to successful sales. Age 31, single. PW-2897, Chemical Week.

Selling Opportunity Wanted

Distributorship Wanted: Old established and adequately financed, with own warehouse and truckage facilities, interested in obtaining distributorship for State of California and adjacent states on basic raw materials and chemical products for the industrial trade. RA-2886, Chemical Week.

EQUIPMENT—used-surplus

For Sale

Autoclaves, acid, brick-lined, ½" shell; 6'10" x 14'. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Centrifugal, 36"x40", Bird, Continuous, Consoli-dated Products, 14-18 Park Row, N.Y. 38, N.Y.

Colloid Mills—Approximately twelve Premier Colloid Mills, Type U-4, 8" Rotor. Also spare parts for approximately five additional complete mills. All mills in excellent condition. Each mill equipped with 10 h.p. Explosion-proof Howell motor. Original cost, $2,074.00 each. Prefer offer for entire lot but will consider individual offers. Rhoco Sales Corporation, 5240 Margaretta Ave., St. Louis 15, Missouri.

Column, S.S., Sieve Plate, 16 Plates, Size 18" x 18 ft. Arthur Process Equip. Co., 29 B'way, NYC

Column, Steel Bubblecap, 21" diam., 20 plates 7" Spacing. Arthur Process Equip. Co. 29 B'way, N.Y.C.

Dryer, Vacuum Shelf Dryer, MD Pumps, 3 HP motor Eagle Industries, 110 Washington St., N.Y.C.

Dryer, Vacuum shelf, Devine, double door, 17 shelves, pump, condenser. 3, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y. BArclay 7-0600.

EQUIPMENT—used-surplus

For Sale

Dryer, Devine 20 Shelf Vacuum Chamber. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Dryers, Devine Vacuum Drum, 5' x 10'6". First Machinery Corp., 157 Hudson St., N.Y. 13.

Evaporators Single and Multiple Effect, includ-ing long tube type. First Machinery Corp., 157 Hudson St., N.Y.

Evaporators, Multiple effect in copper or steel. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Filter, Alsop S.S. 8x10 w/pump and motor. Machinery Exchange, 131 Thompson St., N.Y.C. GR 7-3044.

Filter, 4'6" x 6' Feinc Rotary Vacuum, Alum. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Filter, 8'x8' Rotary Vacuum Precoat, Acid Re-sist. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Filter, 8'x12', Feinc all S/S Rotary Vacuum, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y.

Filter Press, 24"x24", aluminum, 24 chambers, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y.

Filter Press, 30"x30", aluminum, 45 chambers, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y.

Filter Press, 30"x30", iron, Shriver and John-son, 35-40 chambers, 6. Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y., Barclay 7-0600.

Filter Press, 30"x30", iron, Sperry, steam heated, 30 chambers, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y., Barclay 7-0600.

Filter, Sweetland #5, 29 leaves. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Hammermills Heavy Duty Powerful Mills with motors up to 125 H.P. First Machinery Corp., 157 Hudson St., N.Y.

Mill, New 6x12" 2-rolls, Johnson Joints, 5 HP motor complete. Eagle Industries, 110 Washington St., N.Y.C.

Mixer, 110 gal. stainless Patterson Vacuum, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y.

Mixer, Lab BP Vacuum, 17 gal. Jktd. MD, com-plete. Eagle Industries, 110 Washington St., N.Y.C.

Mixer, 200 gallon B.P. Jacketed, m.d., Con-solidated Products, 14-18 Park Row, N.Y. 38.

Mixer. 7000#, Dry Powder, horiz. jack. 12'x5' x5', spiral agitator, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y., BArclay 7-0600.

Pebble Mills International 8' x 8', porcelain lined, complete with gear motors. First Machinery Corp., 157 Hudson St., N.Y.

Pulverizer, Raymond High Side 5 roll, Consoli-dated Products, 14-18 Park Row, N.Y. 38, N.Y.

Sifter, No. 71, Day Roball, all S/S, 40"x48", 4, Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y.

Still, 500 Gal., Steel, Vac. & Agit., Jktd., 125#. Arthur Process Equip. Co., 29 B'way, N.Y.C.

Tablet Press, Stokes DD2, 23 punch, Consoli-dated Products, 14-18 Park Row, N.Y. 38, N.Y.

Tablet Press, Stokes R, single punch, Consoli-dated Products, 14-18 Park Row, N.Y. 38, N.Y.

Tank, 3000 gal. Stainless Steel, Horiz. truck. Perry Equip. 1415 N. 6th St., Phila. 22, Pa.

Tanks, S.S. from 250-3500 gal. jktd. MD, Agit. Eagle Industries, 110 Washington St., N.Y.C.

Tanks, Storage, S.S. Oval Shaped, 3500 & 2200 Gal. Equipment Clearing House; 289—10 St., B'Klyn, 15.

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Ball Mill, Chrome Mang. Jack. 100 to 500 gal. Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y.

Kettles, Stainless Steel, 500 to 1,000 gal. Con-solidated Products, 14-18 Park Row, N.Y. 38.

Pulverizer, No. 2 or No. 4 Mikro Pulverizer. Con-solidated Products, 14-18 Park Row, N.Y. 38.

Tanks, Steel, 10,000 to 25,000 gal. Consolidated Products, 14-18 Park Row, N.Y. 38, N.Y.

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Editorial Items:—Numerals are page numbers; the ABC's distinguish among items where more than one is on a page. There is a number on the coupon for each item referring to new products, equipment, and literature.

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Editorial Items

37A	48A	48C	48E	48G	48I	48K
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						48M

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1	5c	6	18b	B25a	B25g	27	30	B33a	34b	40
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4	5f	T12	21	B25d	T26a	29b	T32c	B33d	B37b	50
5a	5g	B17	24	B25e	T26b	29c	B32			

Expires April 5, 1952

BOOKLETS . . . .

Chemicals

Red Lead Paint Formulations

20-p. booklet suggesting twenty-seven red lead base primer formulations of the oil, oil-resin, and synthetic-vehicle types for use in the protection of ferrous surfaces, under diverse types of conditions—such as severe atmospheric conditions, tidewater exposures, and submerged exposures. A formula index and table of general properties is intended as a guide for formulators and specifiers in their selection of paints, according to particular requirements. Lead Industries Association.

Resins

8-p. booklet summarizing characteristics and specifications of firm's new synthetic resins as well as giving information on the formulation of finishes, the relieving of raw material shortages, by means of using resins derived from non-critical materials, and resins for meeting Government specifications. U.S. Industrial Chemicals.

Additive Compound

Pocket-sized folder dealing with "Sequet," an additive compound designed to increase the efficiency of bottle-washing operations, outlines its advantages and instructions for its use. Diamond Alkali Co.

Soaps, Surface Agents, Detergents

4-p. leaflet lists available services along the line of analysis, testing, research and development for soaps, surface agents, detergents, emulsifiers and wetting agents. Raymond C. Crippen Research and Development Labs.

Processing Size

4-p. folder dealing with, "Good-Rite TS-20," a new processing size for nylon designed specifically for single end sizing and warp slashing; outlined here are physical characteristics, applied weights of size (which indicate typical usage) and methods of analysis. B. F. Goodrich Chemical Co.

Tall Oils

4-p. report on tall oil as used in emulsions discusses the nature of emulsions, emulsifiers, soluble oils, and methods and equipment involved in the making of emulsions. Bibliographical references are listed on last page. Tall Oil Association.

Fatty Alcohols

Buying and specifying guide describing what "Cachalot" fatty alcohols are, charts typical analyses, and lists typical properties and uses for cetyl, oleyl, and stearyl alcohols in the chemical processing industry. M. Michel & Co., Inc.

Organic Compounds

Catalog and price list of organic intermediates and reagents is alphabetically indexed, and priced in laboratory, pilot and commercial quantities. General details concerning terms, delivery and services are included. Arapahoe Chemicals, Inc.

Equipment

Unit Heaters

56-p. catalog devoted to Torridor blower type unit heaters, which are used to heat spaces where air must be spread over great distances such as in factories and warehouses, gives capacity and performance data as well as selection and application information. The Trane Co.

Abraser Specimen Holders

4-p. price list illustrating, diagramming and describing various models of specimen holders for abrasion testing, as to material of construction used, typical applications and price. Taber Instrument Corp.

Electric Heaters

4-p. folder covering various types of portable and built-in electric air heaters —convection, blower, duct and radiant models; application photographs illustrate factory and office uses. Edwin L. Wiegand Co.

*Instruments

16-p. booklet reviewing the main features of about 20 of firm's different instruments, along with basic accessory units. Various sections cover pH meters, glass electrodes, spectrophotometric equipment—operating in the visible and ultra-violet ranges—infrared spectrophotometers and other special instruments. Beckman Instruments, Inc., South Pasadena 17, Calif.

*Combination Pressure-Vacuum Vent Valves

22-p. bulletin giving descriptions, operating data, specifications, and prices for two models of combination pressure-vacuum vent valves—one which includes a flame arrester element, and one which does not. A major section contains 14 relieving capacity charts, one for each valve size. Black, Sivalls & Bryson, Inc.

Spray Nozzles

4-p. bulletin illustrating and describing spray nozzles to be used for cleaning all kinds of materials, screens, fruits, vegetables, etc. Link-Belt Co.

* Requests should be made directly to company on business letterhead.

PICTURES IN THIS ISSUE:

Cover (top)—Anker Studio; p. 2 (left)—Pat Liveright; p. 11 (left) — Risskam, Standard Oil Co., (right)—Harris & Ewing; p. 12—Libsohn, Standard Oil Co.; p. 14 (left)—Dick Wolters, McGraw-Hill; pp. 15 & 16—Wide World; pp. 22 & 23 (1-3) — Anker Studio — (4-10) — Commercial Photo Service; p. 36 (top) & p. 37—Adolph Presler Photo; p. 43—Chas Pfizer & Co., Inc.

ADVERTISER'S INDEX

CHEMICAL WEEK

JANUARY 5, 1952

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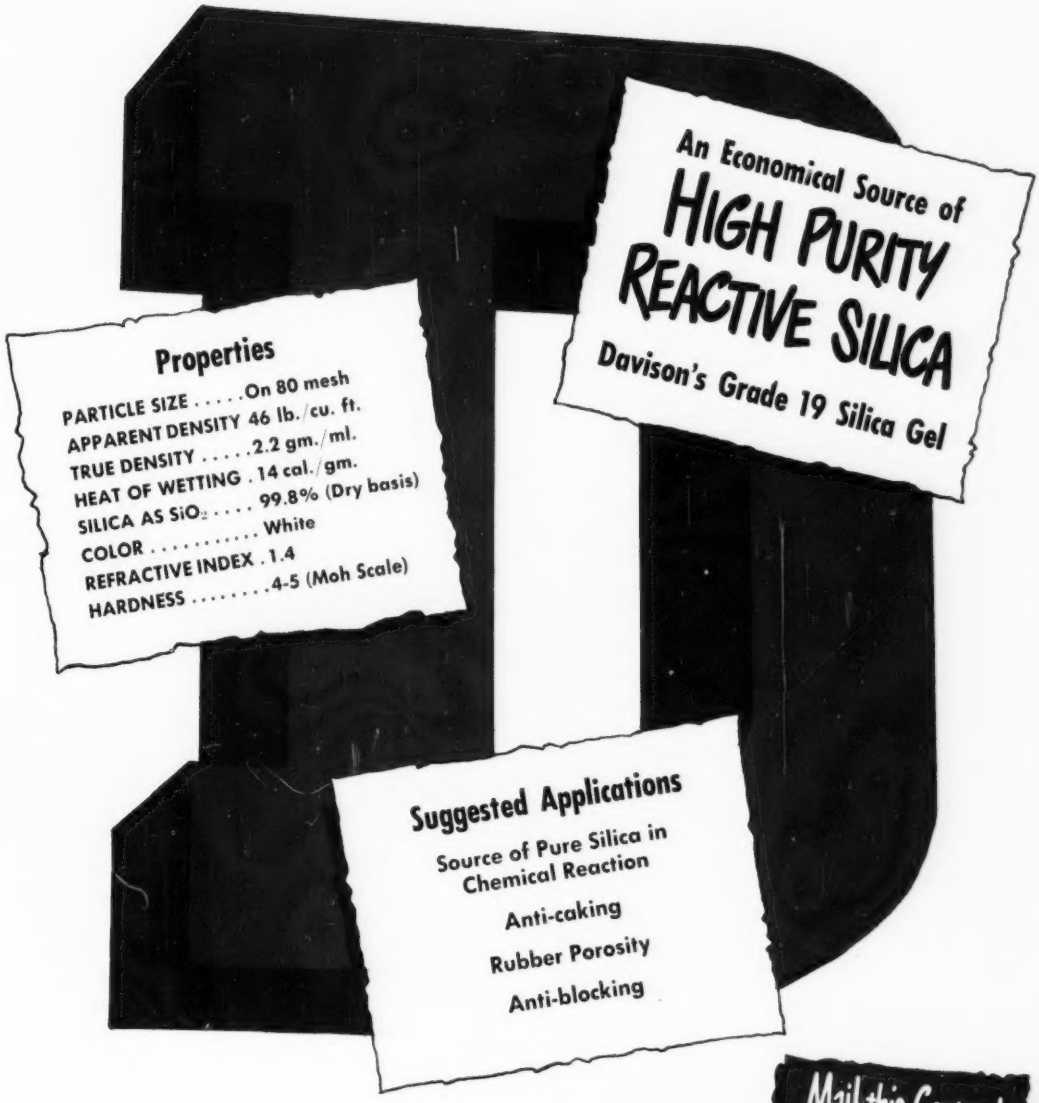

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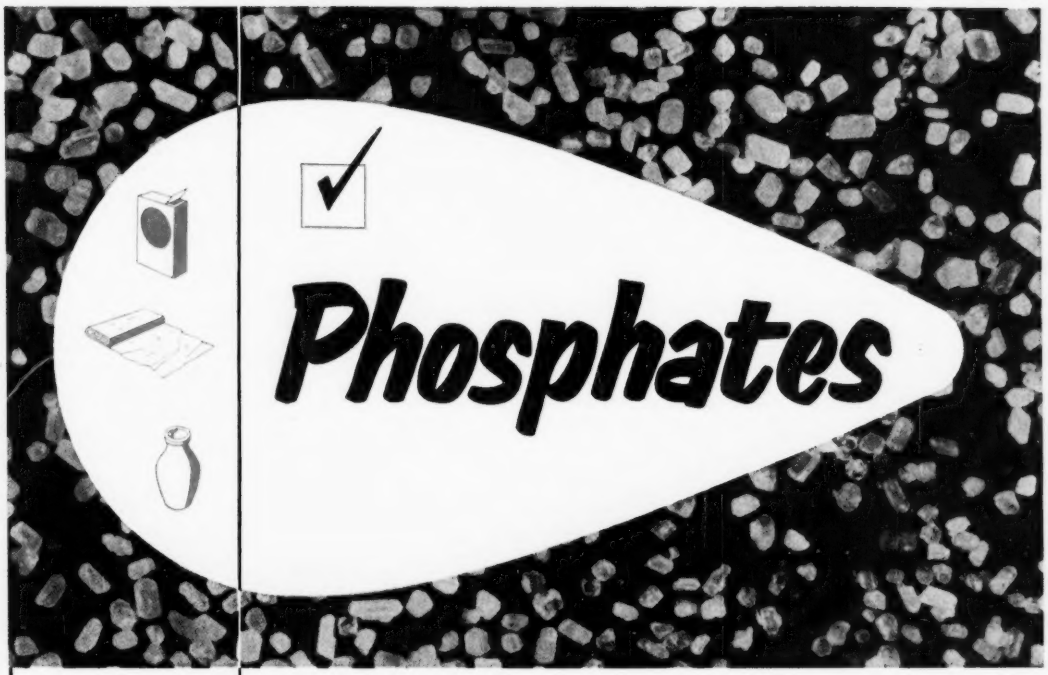

BASIC CHEMICALS

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✓ Check with GENERAL CHEMICAL

Wherever phosphates are used, General Chemical's products are preferred for their uniformity and their consistent high quality. That's because they have been developed out of a continuing research and quality control program which results in materials ever abreast of industry's newest needs.

Wherever your plants are located, you will find General can serve you well through its coast-to-coast chain of distributing stations.

PRODUCT	GRADE	PACKING
TRISODIUM PHOSPHATE $Na_3PO_4 \cdot 12\ H_2O$ (TSP)	Flake Coarse Medium Standard Fines	Multiwall paper bags, net wt. 100 lbs. Fiber drums, net wt. 100 lbs.; 375 lbs. Bulk car shipments
DISODIUM PHOSPHATE, Anhydrous Na_2HPO_4	Flake	Multiwall paper bags, net wt. 100 lbs. Fiber drums, net wt. 100 lbs.; 280 lbs.
	Powdered	Multiwall paper bags, net wt. 100 lbs. Fiber drums, net wt. 100 lbs.; 400 lbs.
SODIUM TRIPOLYPHOSPHATE, Anhydrous $Na_5P_3O_{10}$	Powdered Granular	Multiwall paper bags, net wt. 100 lbs. Fiber drums, net wt. 400 lbs. Bulk car shipments
TETRASODIUM PYROPHOSPHATE, Anhydrous $Na_4P_2O_7$ (TSPP) (Pyro)	Powdered	Multiwall paper bags, net wt. 100 lbs. Fiber drums, net wt. 100 lbs.; 400 lbs.
	Granular Diamond	Multiwall paper bags, net wt. 100 lbs. Fiber drums, net wt. 100 lbs.; 350 lbs. Bulk car shipments

For further information on General Chemical Phosphates, consult the nearest Company office serving you.

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

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